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THE PHYSICIAN'S OBLIGATION *

STANLEY H. OSBORN, M.D.
HARTFORD, CONN.

The section on Preventive and Industrial Medicine and Public Health of the American Medical Association holds today one of the major keys in the practice of modern medicine. The section activities cover certain subjects that are very much in the public eye, the prevention of disease and the keeping of health. The public is forced to read magazine articles, notices in the press and advertisements of every description on how to keep or to become healthy.

Our association is doing a rather remarkable work in the line of health education through the Bureau of Health and Public Instruction. The work of this bureau is unfortunately not known to the majority of physicians. The monthly magazine *Hygeia* fills a crying need for a magazine on health, personal and public, and should be more widely patronized, particularly by physicians. It should be on the table in the reception room of every practicing physician.

The administration of mass public health is being carried out by two large groups: first, the departments and boards of health, and, second, numerous associations and societies that are promoting the general problem of community health or may be confining their activities to some particular field, as tuberculosis, cancer or child health. On the other hand, the promotion of individual personal hygiene and health can best be carried out by the physician.

The private physician is the only person who can approach the proposition of public health from a personal and individual standpoint. He may well be called the private in the war on preventable diseases. Is he doing what he can to aid his patients and his families in this matter? Is he going the limit, using the knowledge he has at his command in keeping the families in his practice well? Or is he quietly awaiting the time when his patients are going to call on him for an annual physical examination, or request some vaccine to be administered to prevent some communicable disease? Is this type of physician, the passive type, doing what he should for the welfare of his patients? Is he a true physician? Is he doing his duty? Is not this type of physician the one who usually bemoans and regrets the passing of the family physician and the activities of the nonmedical practitioner?

Each physician in the country may well ask himself the question, "Am I doing what I should for the health of my patients in the communities in which I practice medicine?" We as physicians not only should be wide awake to the latest developments in the prevention of disease but should most actively and energetically in private practice seek to do the best we know how for our patients and families.

It matters not whether we are in a department of health, in a voluntary health group or private practitioners, when we consider the prevention of disease. Preventive medicine should be foremost in our minds, because it is often the most valuable merchandise the physician can give his patient.

It is true that physicians of the country cannot use any method that savors of advertising or commercialism in carrying on their practice, but there is nothing in the world to stop them from trying to teach some knowledge of preventive medicine when they are called to see a patient. It is a well known incident in surgery for the surgeon to cover more territory for the welfare of his patient than he had anticipated. It is not uncommon, I am told, for a patient to go to a hospital for an appendectomy and, when the time comes to count up his gains and losses on leaving the institution, to find that he is lacking one or more other parts of his anatomy because of the conditions the surgeon found on opening the abdomen. This is, in a way, an example of preventive medicine.

Are physicians doing their duty to their patients and their community unless they actively seek to promote the health of their patients and actively interest their patients in healthful living?

When the general practitioner attends a birth in a family, he automatically uses a prophylactic for ophthalmia neonatorum. There was a time when he did not do this. The physician has an opportunity at the time of birth to tell the parents that he should and will see the child at regular intervals for the next few months and that the baby should be immunized against diphtheria in six months. It is possible that the patient may be attended by an obstetrician. He should surely, in the interest of his patient, urge the parents to have their family physician immunize the child against diphtheria at the age of 6 months. It seems that it is not only logical but the duty of the obstetrician so to advise the parents in a positive manner and not in any passive offhand statement.

Preventive medicine must necessarily be carried out in a more energetic and positive manner than curative medicine. A well person has not the urge of pain and "that sick feeling" to seek medical aid that a sick person has. A person feeling sick will usually call for aid.

A well person must have the several measures of preventive medicine brought forcibly to his attention before he will even become interested in the proposition. This the family physician should do. He must do it if he is giving all he can for the health of his patients.

* Chairman's address, read before the Section on Preventive and Industrial Medicine and Public Health at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

It is his duty in this age to foster actively the carrying out of prophylactic measures in the families of his patients, including such measures as the placing of silver nitrate in the eyes of the new-born, immunization against diphtheria and smallpox, immunization against typhoid and paratyphoid when advisable, and periodic physical examination of adults and children at regular intervals. Other measures that may depend on the local environment, such as the prevention of rickets and goiter, are certainly preventive measures that the conscientious physician cannot neglect.

As an example of another line of attack I might point out the possibilities in a well known communicable disease such as typhoid. The physician in charge of the case should most certainly ascertain whether other members of the family ever had the disease. He should have the necessary tests done to see whether there is a typhoid or paratyphoid bacillus carrier in the family, for it is often true that a person has had typhoid without realizing it. If a carrier is found, the carrier should be given instructions in writing in regard to his personal hygiene and cautioned not to handle food to be eaten by others. The others should be immunized at regular intervals for their protection. Finally, the patient with typhoid should be tested, before he is released from observation, to see whether he is a carrier. If he is a carrier, the precautions that have just been mentioned should be scrupulously carried out. These activities may cost more than the patient can afford. If so, in matters such as this where the community may become involved, the health officer stands ready to cooperate.

As to the second item—the duty of the physician to the community—should he remain strictly aloof and tend to his knitting? Should he ignore requests for his presence on the local board of health or different committees of local societies? Should he refuse to become a member of this board or that society, merely to keep out of imaginary politics or because it will take a little of his time? He most certainly should not. Not only the physician but the medical societies should be actively interested in these community affairs.

When the physicians of a community fail to accept such appointments, it may result in some ill trained individual being invited to take the appointment which often leads to misadvice, lack of proper professional procedure and friction with the medical profession.

It is realized that a small percentage of physicians in the country is doing essentially what has been outlined. It is my object in this paper to keep this phase of preventive medicine in the forefront of the practice of medicine.

I have been stressing the duty of the private physician. There are similar duties of the official and of the voluntary health agencies. The most important duty of the latter two groups is to aid the physician in carrying on his work in this preventive line and not to carry out a single piece of preventive medicine that the physician can do and should do.

If it is felt that the physicians in a community are not doing their work, it is not the duty of the department of health or voluntary agencies to assume at once the neglected activity until they have earnestly and conscientiously brought the matter to the attention of the physicians and tried to have the physicians of the community assume the burden. The establishment of clinics in a neighborhood through excessive enthusiasm and lack of foresight may lead to unnecessary friction and an irreparable conflict of opinion. A few seeds of cooperation planted before a clinic is established will be far more productive for the health of the community.

Finally, I wish to express my appreciation to those physicians who are carrying on essentially as this brief paper has attempted to portray. On the other hand, we through our societies should endeavor to spread the practice of individual preventive medicine much more than is now being done. It does not appear practicable or desirable to leave to another group of possible specialists the practice of preventive medicine which is the field of the general practitioner, the family physician.

I have endeavored to outline in this address a few essential thoughts as they appear to me in the practice of medicine today. If I have succeeded in leaving with you an inspiration to do a bit more of preventive medicine in your practice, I shall feel well repaid for this trip to the sunny Pacific Coast.

8 Washington Street.

FAILURES AFTER CHOLECYSTECTOMY*

RICHARD B. CATTELL, M.D.
AND
EVERETT D. KIEFER, M.D.
BOSTON

[EDITORIAL NOTE.—This paper, together with the paper of Dr. Mentzer, concludes the symposium on hepatic and biliary disease. In our last issue we published the papers of Dr. Ravdin and Dr. Wangensteen.]

It is commonly accepted that patients with symptoms due to gallstones are relieved by removal of the gallbladder. However, even after such a valuable procedure as cholecystectomy, there are times when the results are disappointing. In the Lahey Clinic we have recently determined the end-results following 634 operations on the biliary tract after an interval of from one to fifteen years.[1] Follow-up data have been procured in 535 patients. In sixty-five patients in whom cholecystostomy was done, results were unsatisfactory in forty-three, leaving only 28 per cent that were relieved by cholecystostomy. Since this group is so generally found to be unsatisfactory, it would seem that cholecystostomy should be reserved for exceptional circumstances. This paper will be concerned only with unsatisfactory results after cholecystectomy.

In a series of 548 patients we have found fifty-five, or approximately 12 per cent, in whom the result was not satisfactory after cholecystectomy. We have studied this group in order to determine the reason for the poor result, so that the number of unsatisfactory cases can be reduced to a minimum. For the purposes of this paper we have included as unsatisfactory those patients who felt disappointed because of the failure to bring about a disappearance of their symptoms. As we shall point out later, not all of these patients can be classified as having obtained poor results from cholecystectomy because in many instances the operation was well indicated and accomplished all that could be expected, but the persisting symptoms were due to a coexisting disorder of the gastro-intestinal tract which was not affected by removal of the gallbladder.

We have divided these cases as follows: In the first group we have placed those patients in whom the dis-

* From the Lahey Clinic.

* Read before the Section on Surgery, General and Abdominal, at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 11, 1929.

1. Cattell, R. B.: Surgery of the Biliary Tract: A Study of End-Results, Ann. Surg. **89**: 930 (June) 1929.

appointing result arose directly from the operative procedure itself. These untoward effects of the operation include incomplete removal of stones, injury to the common duct, postoperative hernias, and operative deaths. In the second group are those patients who have persisting symptoms due to coexisting gastro-intestinal disorders, although they have been partially relieved by the operation. These include the patients with definite gallbladder disease who have, in addition, functional colon disorders, peptic ulcer, achlorhydria, and other conditions in which gastro-intestinal symptoms predominate. In the third group are those patients in whom the diagnosis was probably incorrect and, since their original symptoms were unrelated to the gallbladder, they were of course not relieved by its removal.

The first group, being concerned with unsatisfactory results due to the operation itself, is clearly defined. There was a total operative mortality of 5.1 per cent in the entire series. This includes all deaths over a period of seventeen years after cholecystectomy, common duct stones being present in many instances. Postoperative hernias were found in 6 per cent of 235 patients personally examined. Two of these caused sufficient symptoms to require operation, but the other twelve did not require treatment. Stricture of the common duct followed the operation in one instance. This patient was subjected to a second operation and was relieved. One patient had a recurrence of symptoms shortly after operation and, at a second operation, two small common duct stones were found. These were undoubtedly left at the first operation.

In this first group an attempt must be made to reduce the number of operative deaths. During the past two and one-half years since our previous report was completed, in 345 cholecystectomies, exclusive of malignant conditions, there have been three deaths, a mortality of 0.9 per cent. This compares favorably with the 5.1 per cent operative mortality in the previous series of 548 cholecystectomies. The lowered mortality, the result of a number of factors, has taken place largely because the cases have been better selected, the operative procedures have probably been better carried out, the preparation for operation has been improved, and, in the majority of cases, spinal anesthesia has been employed. The incidence of incisional hernia in the later group is not known, but we feel that it will be lessened by more satisfactory wound closure under the complete relaxation of spinal anesthesia.

In our earlier group the number of unsatisfactory results and the operative deaths were undoubtedly increased because the operation often included procedures outside the biliary tract as well. For some time we have avoided extrabiliary operative procedures at the time of cholecystectomy and are sure that this policy has lowered the operative mortality. Exploration of the common duct for possible calculi has been employed in a large proportion of cases. In the former series, choledochostomy was done in 15 per cent of all operations and stones were found in 8 per cent. In the later series, exploration of the common duct was done in 30 per cent and stones were found in 12 per cent. This 50 per cent increase in the incidence of common duct stones suggests that stones were probably left in the ducts before exploration became a common procedure. The high incidence of common duct exploration reduces the possibility of leaving stones in the ducts to a minimum. In spite of exploration in 30 per cent, there has not been a single instance of stricture resulting, and the operative mortality has not been increased.

In the second group, attention may be called to the importance of a complete diagnosis. For example, a patient may have definitely demonstrable gallstones giving rise to typical attacks of biliary colic. The indications for cholecystectomy are definite and clear, but if a thorough examination is made it may reveal that the patient is also suffering from a separate train of symptoms due to a coexisting irritable colon. If the colon disorder is neglected after the operation, some of the symptoms will persist and the patient is apt to be disappointed. For this reason a careful study of the patient from a general medical point of view is nearly always indicated. Since gallstones occur frequently without causing symptoms, the incidental finding of calculi in the gallbladder may distract the attention from the disease of which the patient actually complains. We believe that in all cases of gallstones the gallbladder should be removed early in order to prevent recurring attacks of inflammation and to avoid the passage of stones into the common duct producing the more serious results of obstruction. It should be recognized that this is done for the prevention of future trouble rather than for the relief of symptoms. The following is a brief synopsis of a case typical of the second group of unsatisfactory results:

A woman, aged 65, came to the clinic in December, 1925, because of attacks of severe pain in the right upper quadrant occurring at intervals over a period of twenty years. She also complained of generalized abdominal distress and soreness, particularly in the left upper quadrant. She suffered from constipation and relied entirely on cathartics for bowel movements. The stools were mushy. Bloating and flatulence were marked. The physical examination showed that she was obese. There was some tenderness over the gallbladder. There was no history of jaundice. By means of the x-rays gallstones were demonstrated. At operation the gallbladder was large and contained stones. The walls were thickened and showed evidence of chronic inflammation. Cholecystectomy and appendectomy were done.

During the following year the patient complained of persisting abdominal distress, shifting pains, flatulence, headaches and constipation. She was put on a bland, nonirritating diet with caloric restrictions, and marked improvement resulted. She later discontinued her diet with a return of symptoms, and in October, 1928, was readmitted to the hospital for observation. At this time gastro-intestinal study showed an irritable spastic colon with numerous diverticula. On medical treatment directed toward improvement of the bowel function, she became symptom free. Since then she has been well most of the time.

Although there is not the slightest doubt that cholecystectomy was of distinct value, or even a necessity, to this patient, her persisting symptoms were so much like her original complaints that she or a noncritical observer might have felt that the operation was useless. It seems likely that a considerable percentage of the disappointing results after the removal of a definitely diseased gallbladder can be accounted for in some such manner. This type of failure stands not as a criticism of the surgical treatment of cholecystic disease but rather as a criticism of the general management of the case.

Postoperative hygiene of a practical sort would undoubtedly be of distinct value if applied in all cases after cholecystectomy, and this has been done in our recent cases. It is well known that patients with gallbladder disease show a marked tendency to gain weight after the operation. All patients should be warned against becoming too heavy and many should be given directions on how to avoid the extra gain in weight.

If achlorhydria is present, some digestive symptoms usually will persist until dilute hydrochloric acid is administered in adequate doses. If there is a coexistent peptic ulcer, cardiospasm or other gastro-intestinal disorder, complete return to health cannot be expected until proper treatment has been instituted.

In this second group, the most common cause of persisting digestive symptoms was a functional colon disorder. Alvarez and others have pointed out that gallbladder disease may cause constipation or diarrhea. Some patients resume normal bowel function after cholecystectomy, but there are many who, if not properly treated, continue to be addicted to cathartics with the attendant train of symptoms. The irritable colon seems to be frequently associated with gallbladder disease, which probably aggravates the condition. Some patients resort to catharsis for relief of distress caused by a diseased gallbladder, thereby developing more trouble by the overstimulation of the colon. During the convalescence and for an indefinite period afterward, in order to avoid the recurrence of symptoms, it is necessary to restrict the diet to nonirritating foods, to eliminate all laxatives, and to place the patient on a regimen which favors normal bowel function. While it is obvious that the patient with gallbladder disease associated with a frank disorder of the colon should be treated after operation to relieve this condition, many other patients seem to be more comfortable during the convalescence and the weeks in which the gastro-intestinal tract is readjusting itself if they are guided in their diet rather than allowed to eat indiscriminately.

Disappointing results after cholecystectomy in the third group have been attributed to a wrong diagnosis because there was no evidence of stones or of marked acute or chronic inflammation and the symptoms were not relieved or appreciably affected by the removal of the gallbladder. The following case illustrates this group:

A woman, aged 31, came to the clinic in January, 1925, because of pain in the right upper quadrant, radiating to the back, which was sharp but not severe and had been almost constantly present for one month. There was general malaise and loss of vigor, some nausea and belching, but no vomiting. The bowels were irregular and required frequent catharsis. The past history was negative except for a previous appendectomy.

Physical examination showed that the patient was moderately overweight but otherwise normal. Gastric analysis showed normal acidity. The stomach and duodenum did not present any evidence of abnormality. At operation the gallbladder showed somewhat thickened walls, the inner surface of which was reddened and showed small yellow deposits of soft cholesterol. This was typical of an early "strawberry" gallbladder.

The patient returned a year later complaining of the same pain and digestive symptoms that she had had before operation. Gastro-intestinal study at that time showed hyperirritability of the colon. She was readmitted to the hospital for bowel management with complete relief. Since then she has been symptom free most of the time with normal bowel function but still finds it necessary to use discrimination in diet. On several occasions she has broken her diet, usually with a return of distress.

Of the twenty-eight patients comprising this third group, seventeen were subjected to further gastro-intestinal study some time after the cholecystectomy in order to determine the cause of the persisting symptoms. From a study of this group, 50 per cent of the mistaken diagnoses appear to be due to the presence of functional colon disorders. The remainder were divided among several other conditions. Undoubtedly a number of the mistakes were due to the fact that many of the patients were operated on before the introduction of cholecystography. Only ten were studied with the dye test, leaving eighteen in whom the diagnosis was made from the history and examination. It is instructive to find that in not a single case among the twenty-eight were the classic symptoms of gallbladder disease present. The symptoms were chiefly dull pain or distress, usually generalized in the epigastrium but sometimes most marked in the right upper quadrant. Gaseous eructations, nausea, distention, flatulence, vomiting and irregular bowel function usually were accompanying symptoms. These symptoms may be caused by gallbladder disease, but they are probably more characteristic of colon disorders. Occasionally colitis will produce rather severe pain in the right upper quadrant with localized tenderness. It is in the differentiation of this condition that the Graham test is of the most value in gallbladder diagnosis. However, this valuable test is subject to certain errors of interpretation. Nonvisualization of the gallbladder after either the oral or the intravenous administration of the dye should not be considered conclusive of gallbladder disease when there is clinical and laboratory evidence of a severe functional colon disorder. It has been frequently observed in this clinic that in these cases a second Graham test after a few days of bowel management will show a gallbladder filling, concentrating and emptying normally. The present practice at the clinic is to put all patients with colon disorders and unsatisfactory gallbladder visualization in the hospital on a regimen of bowel management as a therapeutic test. After a few days the Graham test is repeated and, if there is still no visualization, cholecystectomy is done and is followed by continued treatment of the colon. Graham has repeatedly pointed out the tendency to error when a diagnosis is made on the faintness of the gallbladder shadow after the administration of dye or on the size or shape of the gallbladder. This is in accordance with the experience in our clinic.

The highest incidence of unsatisfactory results appears to follow the removal of the noncalculous gallbladder. In our previous study of eighty-eight such patients, 63 per cent were relieved, as compared to 89 per cent relieved in the group in which gallstones were present. For this reason the patient with chronic cholecystitis should be treated conservatively with a period of medical management directed toward the relief of stomach and intestinal symptoms. This frequently either relieves the symptoms or clears up the diagnosis. If after a reasonable time the symptoms still appear to be due to a diseased gallbladder, laparotomy should be done with thorough exploration and the gallbladder should be removed, even though its gross appearance is not strikingly abnormal. These precautions will diminish the unsatisfactory results following cholecystectomy for the noncalculous gallbladder.

Finally, we feel that the unsatisfactory results after cholecystectomy can be considerably reduced, and that relief should follow in more than 90 per cent of patients with gallbladder disease. The operative mortality should be kept below 2 per cent. Exploration of the common duct must be carried out in a large proportion of cases, or stones will be overlooked in the ducts. With rare exceptions, in our experience, it has been found that a complete gastro-intestinal investigation should be carried out preoperatively. This not only makes the diagnosis of gallbladder disease more accurate but determines whether there is some

accompanying organic or functional condition. The treatment indicated for both conditions can then be carried out, lessening the occurrence of unsatisfactory results in this group of cases. General hygienic and dietary instructions have been found to be helpful during the postoperative period.

The greatest number of unsatisfactory results after cholecystectomy occur in the noncalculous gallbladder, and in many of these the diagnosis of gallbladder disease is undoubtedly incorrect. This group of poor results should be reduced to a minimum by a short period of intensive study with the patient in the hospital, during which time repeated Graham tests can be done along with medical treatment directed to the relief of the stomach and intestinal symptoms. Operation in these cases should be advised when there is a history typical of gallbladder disease, evidence of impaired gallbladder function and a failure to demonstrate other pathologic conditions to account for the symptoms.

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ANOMALOUS BILE DUCTS IN MAN

BASED ON A STUDY OF COMPARATIVE ANATOMY *

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Anomalous structures in the biliary tract of man have not attracted much interest until recent years. Reports of surgical catastrophes consequent on their presence have stimulated new studies in this field. A review of the comparative anatomy of the gallbladder and bile ducts suggests that most of the anomalous biliary structures in man represent normal arrangements in lower animals. When one considers the development of man, it is surprising that there are not many more instances of vestigial structures, such as persistent branchial clefts, webed feet, remnant tails, accessory lobes of the liver, and vestigial biliary tracts.

Eisendrath [1] states that anomalous biliary ducts are found in about 8 per cent of routine necropsies in man. Flint [2] found only sixty-nine instances of normal duct and arterial trees in 200 cadavers, while Brewer [3] found but three in fifty dissections. Many of these variations were due to abnormalities in the blood supply. My study is limited to anomalous gallbladders and ducts in man. These are compared to normal structures in lower animals.

THE GALLBLADDER

Congenital Absence.—Congenital absence of the gallbladder has been reported in about fifty patients. Undoubtedly a great many other instances have occurred that have not appeared in the literature. In a series of 1,600 necropsies, Nagel and I [4] each found one instance of congenital absence of the gallbladder.

Absence of the gallbladder in lower animals is not unusual, for I have collected seventeen species of fish, nine species of birds, and twenty-six species of mammals that are normally devoid of a fellea vesica. Some animals in the same species apparently possess a gallbladder while others do not. This is notably true in the giraffe; for Crisp [5] and Owen [6] have reported its absence, while Gordon [5] and Macalister [7] have noted its presence.

Some animals develop a gallbladder in embryonal life that disappears during later development. Scammon [8] has reported this phenomenon in the petromyzon and in the pigeon.

Reduplication.—Haberland [9] has collected nine and Boyden [10] five instances of reduplication of the gallbladder in man. Purser [11] found one gallbladder suspended from the right lobe of the liver and another from the left lobe in the same patient. In some instances the two gallbladders were enclosed in a single peritoneal coat, while in others each vesicle was separately ensheathed.[12]

Wagner [5] and Owen [6] state that there are normally two gallbladders in the orycteropus. These are drained by two cystic ducts which unite to form a common cystic duct before entering the hepatic duct. All are enclosed within a single peritoneal coat (fig. 1).

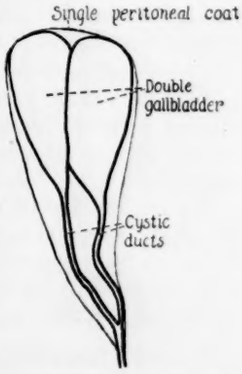

Fig. 1. The double gallbladder of the orycteropus.

Boyden [10] has reported 451 instances of duplication of the gallbladder in animals, mostly cats. The giraffe has been described as occasionally having two gallbladders, and there is a cod's liver in the Hunterian Museum, according to Macalister,[7] that has two gallbladders suspended from it.

Reduplication of organs is undoubtedly an embryonal abnormality. It seems very unlikely that man might have acquired a tendency toward reduplication of the gallbladder from a single animal that normally possesses two of these structures. The cases of double gallbladders in man are interesting but not of material importance in the present study. They have been included so that this work might be reasonably complete.

Accessory Gallbladders.—Three instances of accessory gallbladders have been reported in man.[10] These cases are likewise of embryonal interest, although the hyrax is said by Owen [6] to possess normally a single gallbladder with two accessory pouches (fig. 2). Pope [13] was unable to confirm this observation.

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* Read before the Section on Surgery, General and Abdominal, at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 11, 1929.

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3. Brewer, G. E.: Anatomy of the Gallbladder and Ducts, Ann. Surg. **29:** 721, 1899.

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6. Owen, R.: Comparative Anatomy, London, Longmans, Green & Co. **1:** 427, 449; **2:** 117, 1866.

7. Macalister, A.: Contributions to the Comparative Anatomy and Physiology of the Gallbladder, M. Press **4:** 129 (July-Dec.) 1867.

8. Scammon, quoted by Bloom, W.: Embryogenesis of Human Bile Capillaries and Ducts, Am. J. Anat. **36:** 451 (Jan. 15) 1926.

9. Haberland, H. F. O.: Studies in the Biliary Passages, Arch. f. klin. Chir. **139:** 319, 1926.

10. Boyden, E. A.: The Accessory Gallbladder: An Embryological and Comparative Study of Aberrant Biliary Vesicles Occurring in Man and Domestic Animals, Am. J. Anat. **28:** 177 (Nov.) 1926; The Gallbladder in the Cat: Its Development, Its Functional Periodicity and Its Anatomic Variation as Recorded in Twenty-Five Hundred Specimens, Anat. Rec. **24:** 388, 1923.

11. Quoted by Rolleston, Humphry; and McNee, J. W.: Diseases of the Liver, Gallbladder and Bile Ducts, ed. 3, London, Macmillan Company, 1929; quoted by Schachner (footnote 14).

12. Sherren, J.: A Double Gallbladder Removed by Operation, Ann. Surg. **54:** 204, 1911.

13. Pope, S., quoted by Mentzer, S. H.: Comparative Anatomy of the Biliary System, California & West. Med. **30:** 315 (May) 1929.

Boyden [10] has found accessory gallbladders in the cat, and there is a specimen of a quadruped of unascertained species in the Hunterian Museum in which there are three accessory gallbladders.

The otter, walrus, seal and elephant normally have dilatations in the bile duct at the ampulla of Vater which may serve as accessory gallbladders; some of these have about half the capacity of the gallbladder.

Bilobed Gallbladder. — Schachner,[14] Kaufmann,[15] Moynihan [16] and others have reported bilobed gallbladders in man. Congenital divisions in the gallbladder undoubtedly occur, but most of the partitions are the result of pathologic changes. I have found instances of complete and partial transverse and longitudinal septums in the human gallbladder that have sometimes divided the vesicle into separate chambers, but in each instance gross pathologic changes have also been present.

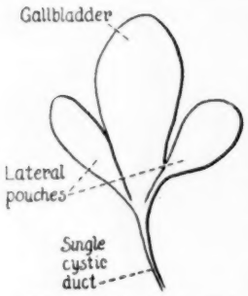

Fig. 2.—The two accessory gallbladders of the hyrax.

Bilobed gallbladders have been found in many cats and occasionally in the giraffe. They are probably not a normal finding in animals, however.

Diverticula.—True congenital diverticula are not commonly found in the human gallbladder. I secured reports of three from a large necropsy series, but most of the diverticula result from inflammatory disease or stones.

Unless the hyrax can be considered an animal that normally possesses diverticula in its gallbladder, I know of no instances of this congenital pouch in animals other than the rather unusual pockets occasionally found in the cat's gallbladder.

POSITION OF THE GALLBLADDER

(*a*) *Buried in the Liver.*—The gallbladder has been found more or less buried in the substance of the liver in many persons. In Wieder's [17] and Lemon's [18] cases it was completely surrounded by hepatic tissue; Lemon's patient had three stones in his gallbladder. Deve [19] found partially buried gallbladders in twelve children, and cases have been reported in the adult by O'Day,[20] Yoell,[21] Schachner,[14] Kehr,[22] and myself.[23]

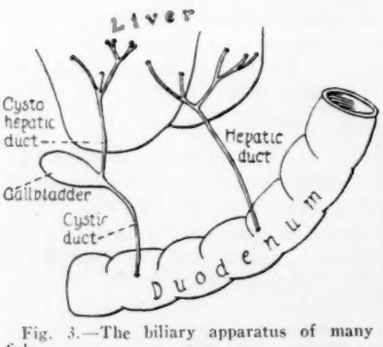

Fig. 3.—The biliary apparatus of many fish.

In many animals the gallbladder lies more or less buried in the substance of the liver. This is true of the shark, many of the reptiles, and most of the marsupials, and of the martin, stoat, weasel, ferret, masked pig of Japan, wart-hog, common pig and Indian boar. Although many of these animals have multiple lobes of the liver, the gallbladder lies within hepatic substance rather than between lobes of the liver.

It seems reasonable to suppose that the human gallbladder, when found intrahepatically, has reverted to the form normally occurring in these lower animals.

(*b*) *Freely Suspended from the Liver.*—Schachner [14] has collected reports of eight cases in which the gallbladder has hung freely suspended from the liver. Brewer [3] noted that in five of 100 cadavers a mesentery was its only attachment to the liver. Kruckenburg [24] found a gallbladder suspended in a peritoneal hammock between the liver and the stomach. It is not unusual to find the vesicle completely enclosed in peritoneum and a centimeter or so from the liver.

These instances in the human being are comparable to those found in many animals in which the gallbladder normally lies some distance from the liver. Crisp [5] found the gallbladder 18 inches from the liver in a large python. The salmonoids, cyprinoids and rays normally have freely suspended gallbladders, as do many of the reptiles.

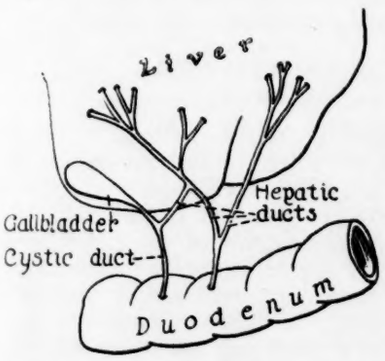

Fig. 4.—The biliary apparatus of some fish.

(*c*) *Unusual Attachments of the Gallbladder.*—The gallbladder has been found to the left of the ligamentum teres in eleven persons according to Schachner.[14] Wischnewsky's [25] patient had one vesicle on the right and another on the left of the round ligament of the liver.

In animals the gallbladder has been found to the left of the ligamentum teres in the phalangista and the marsupial groups, according to Macalister.[7] It is attached to the ligament in the myrmecophaga.

THE CYSTIC DUCT

Absence.—Nine instances of true congenital absence of the cystic duct have been reported in man.[26] In these patients the gallbladder has emptied directly into an hepatic duct or duodenum without the interposition of a cystic duct.

Congenital stricture of the cystic duct has been reported in twenty or more instances.[14] These are not included in this study, for the etiology of this condition is not known. It is probably not related to congenital absence of the duct.

14. Schachner, A.: Anomalies of the Gallbladder and Bile Passages, Ann. Surg. **64**: 419 (Oct.) 1916.
15. Kaufmann, E.: Lehrbuch der speziellen pathologischen Anatomie, Berlin, W. de Gruyter & Co., 1922.
16. Moynihan, B.: Quoted by Rolleston and McNee (footnote 11, first reference).
17. Wieder, H. S.: Intrahepatic Gallbladder, Univ. Pennsylvania M. Bull. **18**: 213, 1905-1906.
18. Lemon, quoted by Wieder (footnote 17).
19. Deve, F.: De quelques particularités anatomiques et anomalies de la vesicule biliare, Bull. et mém. Soc. Anat. de Paris **5**: 261 (March) 1903.
20. O'Day, J. C.: Gallbladder Through Foramen in Liver, J. A. M. A. **44**: 1281 (April 22) 1905.
21. Yoell, R.: Personal communication to the author.
22. Kehr, H.: Die Praxis der Gallenwege Chirurgie, Munich, J. F. Lehmann, 1913.
23. Mentzer, S. H.: Mayo Clinic Bull., February, 1924.
24. Quoted by Haberland (footnote 9).
25. Wischnewsky, A. W.: Doppelgallenblase während der Operation aufgedecket, Arch. f. klin. Chir. **135**: 779, 1925.
26. Schachner (footnote 14). Feldman, W. N.: A Case of Congenital Occlusion of the Common Hepatic Duct, Lancet **2**: 113 (July 19) 1924. Hofmann, A. H.: Unusual Location of the Gallbladder, Zentrlbl. f. Chir. **52**: 456 (Feb. 28) 1925. Hill, N. H.: A Case of Complete Absence of the Gallbladder and Extrahepatic Bile Ducts, Lancet **2**: 654 (Sept. 24) 1927. Weeks, E. A., and Teinke, C. R.: Congenital Atresia of the Bile Ducts, Arch. Pediat. **44**: 391 (June) 1927. Walker, I. J.: Anomaly of the Bile Ducts, Boston M. & S. J. **196**: 733 (May 5) 1927. Stetten, de W.: Anomalous Relations of Cystic Duct or Gallbladder to the Hepatic Duct, S. Clin. North America **2**: 539 (April) 1923. Bellas, J.: Interesting Bile Duct Anomaly, J. Michigan M. Soc. **25**: 460 (Oct.) 1926.

In some animals the cystic duct is so short that it may be doubted whether it actually exists. Pope [13] has noted very short ducts in the honey-badger and baboon. Similar short ducts have been reported in man.[27]

Reduplication.—Reduplication of the cystic duct has been found in patients by Dressmann,[11] Kehr,[22] and Schachner.[14] The latter collected reports of four additional cases from the literature. Blasius [28] and Haberland [9] each report instances of reduplication of the gallbladder and cystic duct. In Haberland's case one of the cystic ducts entered the right hepatic duct, while the other entered the duodenum. I found one instance in which two cystic ducts drained from a single gallbladder, one of which drained into the common duct while the other entered the duodenum.

The orycteropus has two cystic ducts, one from each of two gallbladders. These fuse to form a common duct before emptying into the hepatic channel. The ardea cinerea and the hornbill have two cystic ducts draining from single gallbladders.

UNUSUAL SITES OF TERMINATION

(*a*) *Into the Left Hepatic Duct.*—Just [29] and Kehr [22] each report an instance in which the cystic duct emptied into the left hepatic duct. Eisendrath [1] records a patient whose cystic duct entered the right hepatic duct, and Kehr [22] noted a double gallbladder, the cystic duct from one draining into the left hepatic duct while that from the other emptied into the right.

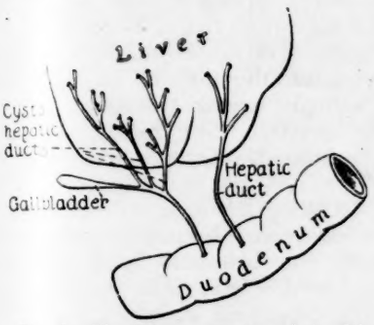

Fig. 5.—The biliary apparatus of the fish lophius.

Among the lower animals, and especially birds, the course of the cystic duct is very variable. It may drain into either the right or the left hepatic duct. The frequency of these occurrences in lower animals may account for the anomalous courses of the cystic duct in man.

(*b*) *Into the Common Duct.*—The cystic duct in man frequently parallels the course of the common duct for varying distances before it empties into it. It may follow an independent course along the common duct for its entire length to enter the latter close to the ampulla. Numerous instances of this sort have been recorded by Flint,[2] Kehr,[22] Brewer,[3] Eisendrath [1] and others.

Many of the fish, birds, reptiles and herbivorous animals normally have the cystic duct emptying into the common duct far down its course (fig. 7).

(*c*) *Into the Stomach.*—Courvoisier [30] has reported an instance in a man in whom the cystic duct emptied into the stomach close to the pylorus. According to Owen,[6] this is the normal site of bile entrance into the gastro-intestinal tract in the fresh water fish the bream.

(*d*) *Into the Duodenum.*—Several authors [31] have reported cases in which the cystic duct has emptied directly into the duodenum. Mathieu,[32] Nobécourt, Bidot and Martin [33] recorded instances of atresic cystic ducts in which the remnant fibrous cord has terminated in the duodenum.

The cystic duct normally empties into the duodenum in many animals, and particularly in birds and reptiles (figs. 3 and 4). In most of these, liver bile is carried directly to the intestine by true hepatic ducts which do not connect with the gallbladder (figs. 3, 4, 5, 7 and 9). In some of the instances recorded in man, a similar true hepatic duct was also present. In others, all of the liver bile entered the gallbladder and was thence carried to the duodenum through a single cystic duct. Although this is an anomalous arrangement in man it is extremely important, for in these persons only a small amount of the total liver bile enters the gallbladder. These instances afford good examples of the suggestion made by Mann [34] that the gallbladder may be but a sampling organ for bile.

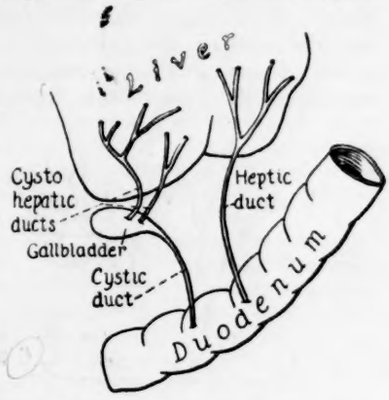

Fig. 6.—The cyst hepatic ducts of many fish, birds and reptiles.

HEPATIC DUCTS

Congenital Absence.—True congenital absence of one or more of the hepatic ducts is not common, although instances have been recorded in man.[35] Most of the other reports include patients with congenital atresia of the ducts. These are not grouped in this study for they do not represent true anomalies.

Cyst Hepatic Ducts.—Cyst hepatic ducts drain from the liver into the side of the gallbladder or into the cystic duct along its course. They are most interesting and important to the surgeon, for they are probably the ducts that are most often severed during gallbladder surgery. Not being anticipated, they are difficult to recognize because of their unusual position and small size. Postoperative bile leakage can undoubtedly be attributed to them in many instances.

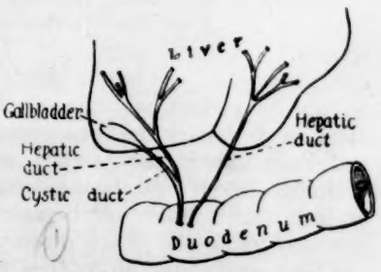

Fig. 7.—The biliary apparatus of many reptiles.

27. Homans, J.: Identification of Common Duct in Presence of Anomalous Condition of Biliary Passages, Surg. Gynec. Obst. **36**: 417 (March) 1923.

28. Blasius, quoted by Boyden (footnote 10).

29. Just, E.: Ein Beitrag zu den Abnormitäten der Gallenwege, Arch. f. klin. Chir. **134**: 203, 1925.

30. Courvoisier, J. G., quoted by Haberland (footnote 9); Casuistische Statistische, Beitrage zur Pathologie und Chirurgie der Gallenwege, Leipzig, C. F. W. Vogel, 1890.

31. Eisendrath (footnote 1). Kehr (footnote 22). Hofmann (footnote 26). Walker (footnote 26). Witzel, quoted by Haberland (footnote 9). Odermatt, W.: Die intrahepatische Variation der Gallenwege, die Ductus hepato-cystici, und ihre klinische Bedeutung, Beitr. z. klin. Chir. **133**: 221, 1925.

32. Mathieu, P.: Retrécissements non néoplasiques des voies biliares principales, Rev. Chir. **37**: 61, 174, 1908.

33. Nobécourt, P.; Bidot, C., and Martin, R.: Congenital Icterus Due to the Absence of the Hepatic Duct, Bull. Soc. de pédiat. de Paris **25**: 156 (March-May) 1927.

34. Mann, F. C.: Functions of the Gallbladder, Physiol. Rev. **4**: 251 (April) 1924.

35. Hill (footnote 26). Witzel, quoted by Haberland (footnote 9). Nobécourt, Bidot and Martin (footnote 33). Simpson, quoted by Haberland (footnote 9).

Cyst hepatic ducts entering the side of the gallbladder in man have been reported by many observers.[36] I have been interested in these anomalous ducts for several years and have searched for them at every cholecystectomy and necropsy. They occur more frequently than is usually supposed, being present in eight of ninety-six consecutive necropsies. Identification of these biliary ducts was established by microscopic sections. Most of the channels found between the liver and the wall of the gallbladder are veins, but some, grossly indistinguishable, are bile ducts. During ether anesthesia the flow of bile from the liver is decreased and not sufficient drainage from the severed ducts is present for recognition. Even under spinal anesthesia the amount of bile seepage is scarcely enough to discern. I know of no way in which these ducts may be identified at the operating table. Ligation of each suspected duct, or searing with the cautery, is advisable to prevent bile leakage or venous oozing. Fortunately, few of the ducts drain sufficient bile to cause serious postoperative complications. One should be on the lookout for them, however, for they undoubtedly account for some of the instances of bile peritonitis that are ascribed to slipping of a ligature from the cystic duct.

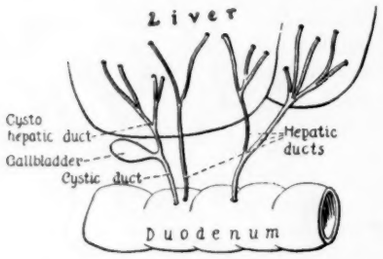

Fig. 8.—The biliary apparatus of some reptiles.

Cyst hepatic ducts normally occur in many fish, birds, reptiles and mammals (figs. 3, 4, 5 and 6). The best known of these are the turbot, the group of siren, lepidosiren and amphiuma. They are said by Owen to be present in the seal, but I have recently dissected a seal and agree with Macalister that they are not present.

Multiple Hepatic Ducts.—Descomps [37] reported accessory hepatic ducts in 12 per cent of the bodies he examined, while Flint [2] found them in 15 per cent. Most of these were additional right hepatic ducts. Accessory hepatic ducts entering the cystic, hepatic or common ducts or the duodenum in man have been reported by many authors.[38] In many of these the usual course of the biliary ducts was supplemented by an additional duct, while in others the normal arrangement of the biliary tree was grossly altered. Amussat [24] and Schachner [14] each report accessory hepatic ducts draining directly into the duodenum. Forster [38] recorded an instance in which one hepatic duct emptied into the stomach while the other drained into the duodenum.

There are many more true hepatic ducts draining directly from the liver to the duodenum than is generally supposed. They are not encountered during surgical procedures or routine necropsies because the gastrohepatic omentum is not dissected. I have been injecting the common duct with methylene blue (methylthionine chloride, U. S. P.) during necropsy studies and anomalous ducts have been frequently found. Most of these are quite small, measuring a millimeter or two in diameter, but occasionally larger ducts are encountered. Although this study is not yet completed, 11 per cent of the bodies have shown anomalous ducts by this method.

Many fish, birds, reptiles and mammals normally possess one or more true hepatic ducts draining directly from the liver into the intestine. The flounder, swordfish, xiphias, iguana, alligator, currasou, duckbill, echidna and chelonia are the best known of these (figs. 3, 4, 5, 6 and 9).

One of the most interesting features of multiple hepatic ducts in animals is the site of bile entrance into the intestine. It has been shown in previous studies that bile enters the intestine at variable sites, in some species close to the stomach and in others far down the intestinal tract.[39] The site of bile entrance into the intestine seems to be related to the type of food eaten by the animal. Meat eaters apparently need bile early in the course of their digestion and it is supplied to them close to the stomach. The herbivora, on the other hand, have bile emptying into the intestine far from the stomach. In some animals having two true hepatic ducts, one enters the intestine close to the stomach while the other is a considerable distance from it.

COMMON DUCT

Absence.—Mohr [24] has reported cases of congenital absence of the common duct in man. Most of those considered congenital absence have been instances of atresia rather than true congenital absence.

Many animals have no structure that corresponds to the choledochus in man. They possess cyst hepatic ducts and a cystic duct draining directly from the gallbladder into the intestine. Other true hepatic ducts carry liver bile to the intestine, so that there is no mixture of cystic and hepatic bile within the ducts.

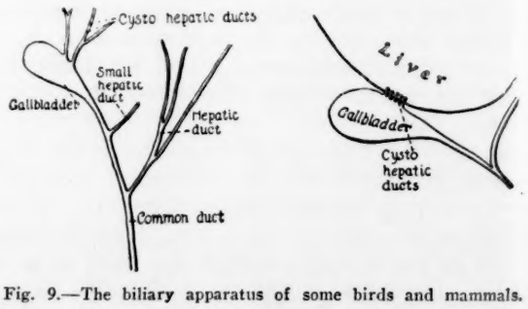

Fig. 9.—The biliary apparatus of some birds and mammals.

Several instances have been recorded in man in which the common duct was so short that it virtually did not exist.[40] In some birds, fish and reptiles, the cystic duct joins the common hepatic duct so close to the ampulla that a choledochus can scarcely be considered present.

Reduplication.—Kehr [22] has collected eight reports of cases of reduplication of the common duct in man. Courvoisier [30] reported an instance in which one choled-

36. Eisendrath (footnote 1). Flint (footnote 2). Brewer (footnote 3). Schachner (footnote 14). Deve (footnote 19). Kehr (footnote 22). Walker (footnote 26). Just (footnote 29). Odermatt (footnote 31). Haberer, H.: Rôle of Ductus Aberrans in Development of Peritonitis Following Operations, Arch. f. Verdauungskr. **43**: 155 (March) 1928. Crucknell, quoted by Rolleston and McNee (footnote 11). Pallen, G.: Ueber die Lage der Hepatico-cysticus Konfluenz den Verlauf der extrahepatischen Gallenwege, Beitr. z. klin, Chir. **121**: 68, 1920.

37. Descomps, quoted by Eisendrath (footnote 1).

38. Eisendrath (footnote 1). Flint (footnote 2). Haberland (footnote 9). Schachner (footnote 14). Kehr (footnote 22). Just (footnote 29). Witzel, quoted by Haberland (footnote 9). Odermatt (footnote 31, sixth reference). Pallen (footnote 36). Walters, Waltman: A Method of Reconstructing an Anomalous Hepatic Duct Injured at Operation, Collected Papers of the Mayo Clinic **15**: 209, 1929. Desgouttes, L., and Ricard, A.: Anomaly of Biliary Passages, Lyon chir. **22**: 823 (Nov.-Dec.) 1925. Guerry, L. G.: Reconstruction of the Common Duct, J. A. M. A. **71**: 1194 (Oct. 12) 1918. Forster, A.: Die Missbildungen des Menschen, Jena, 1865.

39. Pope (footnote 13). Mann, F. C.; Brimhall, S. D., and Foster, J. D.: The Extrahepatic Biliary Tract in Common Domestic and Laboratory Animals, Anat. Rec. **18**: 47 (Feb.) 1920-1921.

40. Eisendrath (footnote 1). Flint (footnote 2). Kehr (footnote 22). Guerry (footnote 38).

ochus entered the duodenum and the other drained into the transverse colon.

As far as I know there are no instances of reduplication of the choledochus normally in animals.

Unusual Sites of Termination.—Laënnec [24] and Bleifuss [24] have each recorded the termination of the common duct in the stomach in man. According to Owen,[6] this is the normal site of bile drainage in the bream, a European fresh water fish.

These instances of unusual duct arrangements in man which correspond to the usual course of the biliary apparatus in lower animals are interesting and important to the surgeon as they represent potential surgical catastrophes. A knowledge of the normal course of the bile ducts in lower animals will aid in anticipating anomalous ducts in man, for the latter may represent a reversion to type. Almost every recorded anomaly in the biliary apparatus of man has conformed to a normal arrangement in some lower animal.

SUMMARY

1. Anomalous biliary tracts occur in about 10 per cent of persons.
2. Most of the anomalous structures in man represent normal arrangements found in animals.
3. Knowledge of the comparative anatomy of the biliary tree is of importance to the surgeon.

450 Sutter Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. RADVIN, WANGENSTEEN, CATTELL AND KIEFER, AND MENTZER

DR. R. L. SANDERS, Memphis, Tenn.: In the main, we all more or less agree on the vital points relating to the management of cholecystic disease. In a series of 1,800 cases of cholecystitis seen in our clinic during the past eight years, one third have been treated surgically. In this series of more than 500 cholecystectomies, accessory ducts were suspected in three cases and demonstrated in only one case. Flint determined the incidence of accessory ducts as being 14.5 per cent in 200 necropsies. They all came from the right hepatic duct and joined the common hepatic duct at the upper third, lower third or junction of the hepatic with the cystic ducts. Moynihan thinks that 80 per cent of such ducts will be injured during cholecystectomy. The practical application of this subject pertains to the closure of the abdomen after the gallbladder has been removed. Richter recently reported a series of 204 cases in which he closed the abdomen without drainage following cholecystectomy. Only two patients died, neither of them showing evidence of bile leakage into the peritoneal cavity. We have closed the abdomen without drainage in a series of 172 cholecystectomies without mortality. One patient died fifteen days after operation from a double suppurative parotitis and secondary meningitis, but the abdomen was in perfect condition and the wound had healed primarily. Clinically, there was no evidence of bile leakage in any case. The postoperative convalescence was smoother and shorter than in a parallel group of cases in which the abdomen was drained. During the same period drainage was instituted in 328 cases with a mortality of 6 per cent. Of course, they were cases representing more advanced disease and often coincident trouble. We are convinced that there is a definite relationship between the clinical history, the extent of disease in the gallbladder, liver and pancreas, and the benefits obtained after cholecystectomy. We are very careful not to remove a gallbladder, even though there is some evidence of disease in the organ, when the clinical history does not clearly indicate a sufficient amount of complaint to justify an operation. Our greatest number of failures after cholecystectomy have occurred in this group of cases.

DR. J. TATE MASON, Seattle: The common and the hepatic ducts should be visualized before the cystic duct is ligated. Dr. Ravdin's research work has given us some practical points that we may work from; namely, that (1) jaundiced patients have a very low glycogen reserve; (2) when they become dehydrated the liver takes up and restores the glycogen reserve very slowly, and (3) in cases in which a great deal of glycogen is thrown into the blood stream very rapidly, it simply spills over into the urine and the patient does not get the good out of it that we expect. We should use only dilute solutions and we should give them slowly. He states that ingested sugar gives a higher blood sugar and a more sustained curve than sugar obtained by other methods. Therefore, I feel that we should, if possible, give sugar by mouth instead of intravenously, provided there is no contraindication to oral administration. We have known for some time that ether and chloroform do considerable harm to dehydrated and jaundiced patients. Within the last year I have obtained a great deal of relief and satisfaction from using spinal anesthesia in this type of case. However, there are a number of cases in which spinal anesthesia is contraindicated, and I have thought that probably in such cases intravenous administration of a soluble barbital compound might be used for surgical anesthesia. Recently I had two cases in which this soluble barbital compound was given with satisfactory results. I was sorry to hear Dr. Ravdin say that the storage of glycogen ceased under the influence of isoamyl-ethyl barbiturate. If this is true, the drug will probably be contraindicated in the very sick patient. In regard to the postoperative complications, we all see a great many. I am surprised that Dr. Cattell reported so few in his series. We have divided our bad results roughly into two large groups: (1) those that we feel cannot be relieved surgically and (2) those that should be relieved surgically. Those we cannot relieve surgically are old cases of prolonged cholecystitis complicated by hepatitis, pancreatitis and so on. Removal of the gallbladder will not afford complete relief in some of these patients. When a partially functioning gallbladder has been removed and all the wear and tear is immediately thrown on the common and hepatic ducts, we have occasionally seen evidence of an acute upper abdominal storm. We think this is due to the readjustment of the common and hepatic ducts to the new relation of things. As to the advisability of removing a small white gallbladder, we always take them out. We drain in all cases.

DR. FRANK H. LAHEY, Boston: Spinal anesthesia is an extremely dangerous anesthesia. I say this because I believe there will be a tendency to employ this anesthetic somewhat recklessly. Dr. Size, who is in charge of anesthesia in our clinic, has investigated the deaths in Boston during the past year, and there have been fourteen—far too many. I have had one, and that is too many. Spinal anesthesia should be employed only by those who are familiar with all its details, who are expert not only in its application but in meeting the emergencies which arise suddenly and must be met quickly if these patients' lives are to be saved. It is a desirable type of anesthesia but it surely is not a type of anesthesia which should be employed as ether has been. Dr. Ravdin stresses the relation of glycogen reserve to the ability of the liver to withstand insult. We know that a good part of the lowered operative mortality rate in bile tract operations in recent years is connected with the elevation of the glycogen reserve in the liver. I would again warn in connection with this as to the need of guarding against reactions from intravenous injections of dextrose. I am interested in the number of common duct stones that I know I have left behind. So if I speak of it this way, there can be no criticism except of myself and my associates in the clinic. When we realize what Dr. Cattell reported, namely, that up to 1926 exploration was done in only 15 per cent of common duct operations and only 8 per cent of the stones were discovered, and that since that time we have done exploratory operations in 30 per cent of common ducts with a discovery of 12 per cent of the stones, an increase of 50 per cent in their incidence, it is apparent that in the past we have certainly overlooked a number of common duct stones resulting in higher eventual mortality, because many of these patients have required reoperation following obstruction, with infection and much more serious lesions. If a common duct is not dilated and is not thickened, and if the patient is not jaundiced, it is not an indication that common duct stones are not present. Common duct stones may easily be overlooked at the ampulla of Vater, at the lowest point at which the common duct is surrounded by the

pancreas, where it is difficult to palpate stones and where it is difficult to deliver stones, and it is here that we must search carefully even in patients with undilated and unthickened ducts and without jaundice, for these often undiscovered stones. One other point has elevated the mortality of gallbladder disease, and that is operating in cases of infectious jaundice.

DR. B. B. DAVIS, Omaha: Two things of much importance have been brought out. The first is, how can we decrease the operative mortality in these cases; the second, how can we improve the terminal results? The first question is being answered by the improvements in technic, in the preparation of the patient and in the proper diagnosis of the case. The use of dextrose has been a distinct improvement. To operate while the patient is unprepared is inviting disaster. Ten or fifteen years ago I frequently operated in cases that I would not think of touching at the present time. It is necessary to increase the glycogen reserve. We want to use dextrose and salt solution and we must not attempt to operate on a dehydrated patient. The technic of the operation should be gentle. I believe many patients have been killed by too much handling of tissue and by ungentleness throughout the operation. As to drainage, I am positive that my results since I ceased to drain, except in a small proportion of complicated cases, have been much better not only in immediate mortality but in the end-results. During 1926 and the first six months of 1927 I operated in 160 cases, with six deaths. I did only four cholecystostomies; I selected only severe cases for drainage. I believe that one of the deaths after cholecystectomy might have been avoided if cholecystostomy had been done. I do not think that there is function in any of these cases after the gallbladder has been drained. That is the reason I discontinue drainage unless the condition is such as to make cholecystectomy extra hazardous. Ninety-one per cent of the 154 patients who lived after the operation were looked on as having favorable results. About 73 per cent were perfectly relieved and about 18 per cent were partially relieved. Of the other 9 per cent, 3 or 4 per cent were absolutely unimproved; the condition of the others was improved but still was not satisfactory. I think the bad results are due to two things: the surgeon and the existing pathologic condition. On the other hand, we sometimes do not operate as we should. Two of these cases that did not show good results were cases of hernia, and we should not get many such cases with present methods. When we close without drainage, hernia is not likely to result.

DR. WALTMAN WALTERS, Rochester, Minn.: Dr. Ravdin's demonstration of the utilization of dextrose by the liver to the advantage of the patient with obstructive jaundice confirms the work of Opie and Mann. As a result of this work Bell and I, in 1921, described a method of preparation of jaundiced patients in order to operate more safely, consisting of the administration of carbohydrates as food, and dextrose by proctoclysis. Its advantage postoperatively in cases in which there is abnormal function of the liver has been described by Judd and Burden, McVicar, and others. Following the experimental work of Lee and Vincent, we began giving intravenous injections of calcium chloride to prevent postoperative hemorrhage. Recent experimental work by Minot and Cutler would seem to indicate that calcium in addition to its hemostatic effect serves as a protective agent for the abnormally functioning cells of the liver which are accompanied by jaundice. A fluid intake of from 3,000 to 4,000 cc. a day is essential to maintain the body fluids. Subsequent to that time, this method of preoperative preparation of jaundiced patients had been rather generally accepted, with excellent results. I take it that Dr. Wangensteen's paper refers principally to chronic biliary fistulas. Both his patients had had biliary fistulas for many months. This element of time is worthy of mention because, although chronic biliary fistulas are potentially dangerous, acute biliary fistulas, particularly in jaundiced patients, may be used to advantage in reducing the degree of jaundice when biliary obstruction occurs from pancreatic tumor completely obstructing the common bile duct. During the last year I have changed over from the one-stage anastomosis of the gallbladder to the stomach or duodenum in obstructive jaundice, the result of tumors in the head of the pancreas, to a two-stage operation in which the establishment of a biliary fistula by cholecystotomy under local anesthesia reduces the degree of jaundice and the effects of bile in the blood to the extent that twelve days later the anastomosis can be done with less risk of bleeding or of renal and hepatic insufficiency. A year and a half ago McVicar and I reported eight cases in which cholecystogastrostomy or cholecystoduodenostomy was performed on patients who were deeply jaundiced from tumors in the head of the pancreas. In this group intravisceral bleeding and hepatic insufficiency due to obstruction from edema in the area of anastomosis were serious handicaps to recovery in some cases. Since I began to use the two-stage operation, I have performed cholecystenterostomy in eight cases of obstructive jaundice from tumors in the head of the pancreas, without a death.

DR. T. G. ORR, Kansas City, Mo.: Dr. Hutchins, in speaking of the gallbladder containing white bile, mentioned anastomosis to the duodenum. I rather question whether cholecystoduodenostomy should be done, unless it is very definitely indicated to relieve obstruction. I have been impressed recently by two cases which I have had; one in which the common duct and in the other the gallbladder was anastomosed to the duodenum. Both these patients had chills and fever over a period of several weeks and were quite ill. We attributed this to an ascending infection in the gall ducts. Recent experiments by J. Shelton Horsley, Jr., have shown that an ascending infection always follows anastomosis between the gallbladder and duodenum. As to the question of complications and poor results following gallbladder surgery, I believe we should take into consideration the question of chronic dilatation in the duodenum. In the past year I have had two patients who had definite gallbladder disease, one a gallstone and the other a subacute cholecystitis. Both had a dilated duodenum that I did not recognize previous to the operation. I believe, therefore, in studying cases of gallbladder disease that this should be kept in mind, and at the operating table the duodenum should be examined carefully, because I feel sure that some of our bad results are due to duodenal stasis.

DR. S. J. HOOPER, Jackson, Miss.: In the Section on Gastro-Enterology and Proctology, Dr. Lahey made the statement that he would not be so careful about parting with his tonsils, or his appendix, if they were diseased, but he would be very reluctant to submit to an operation for an ulcer of the stomach, for he had a high regard for his stomach. If Dr. Lahey had been separated from his gallbladder, as I have, he would feel the same way about his gallbladder. I want to congratulate the surgeons for admitting that the end-results in gallbladder surgery have been disappointing. Dr. Mason's experience is much like mine. I have referred sixty-three cases to surgeons, and satisfactory end-results have been obtained in only thirteen. The unsatisfactory results in 80 or 90 per cent cover the series as we internists see them. The patients come to us and we refer them to the surgeons, and when the results are unsatisfactory we internists are blamed. We feel that the long drawn-out cases are not the ones that should be subjected to surgery because the end-results are disappointing.

DR. I. S. RAVDIN, Philadelphia: As to the use of iso-amyl-ethyl barbiturate as an anesthetic, we at the University Hospital in Philadelphia were among the first to use it as a general anesthetic. It was used by Dr. Charles H. Frazier for the first time in the fall of 1927. We have not used it, however, by the method which is now advocated, namely, intravenously. In a series of goiter and neurosurgical operations we used the rectal method. The patient goes to sleep more slowly since the drug is absorbed slowly and there is not the danger from too rapid intravenous injection which may result in cessation of respiration. We have also used iso-amyl-ethyl barbiturate in a series of sixty-five obstetric cases as an anesthetic for delivery. It seems that it may be a satisfactory anesthetic, but as yet we do not know the method of its elimination, and until we do, it should be used in clinics only, where the greatest care can be given the patient. I would also point out this: The only antidote that we know of at this time is ephedrine. Fifty milligrams of ephedrine will cause respiration to begin again in a patient or an animal when iso-amyl-ethyl barbiturate has been given intravenously and respiration has ceased.

DR. E. H. HUTCHINS, Baltimore: As matters now stand, I am afraid to be much in agreement with the medical man or to argue with him, but I feel that it is his own fault if he

does not get the gallbladder patients in time to cure them. We all recognize the fact that gallbladder surgery has been successful in acute cases. It is in the chronic cases in which duodenal tubes have been worn and gastric lavage has been done for a long time that some satisfaction is obtained.

DR. OWEN H. WANGENSTEEN, Minneapolis: Patients with biliary fistulas and patients with chronic obstructive jaundice, as I have already indicated, have many points in common. The impression I want to leave is this: Patients who are good risks stand external loss of bile well. The patient with chronic obstructive jaundice is a poor surgical risk and a patient in whom complete external drainage of the bile may prove serious. In the absence of biliary infection, I think that if one could do otherwise it would be well not to institute external drainage in such a patient. I disagree with Dr. Walters in the particular of performing preliminary external drainage in patients with complete obstructive jaundice due to carcinoma of the head of the pancreas. In the usual instance, I see no necessity for this added operative procedure, and it is my impression that the risk of external loss of bile is greater than the risk of an anastomotic procedure as compared with external drainage. My mortality in a series of cases only half as large as that of Dr. Walters has been nil for carcinoma at the head of the pancreas with primary anastomosis. I cannot refrain from commenting on the question of drainage after cholecystectomy. Dr. Mayo said a number of years ago that statistics may prove anything, even the truth. Witzel in a letter to Hans Kehr said he had done 500 consecutive cholecystectomies with only one death. In that instance death was due to leakage of bile following omission of drainage. A few years ago I found in the German literature that a large number of cases had been reported in which death was due to the intraperitoneal escape of bile following failure to employ drainage. Von Haberer in Düsseldorf has been a keen exponent of cholecystectomy without drainage. In a visit to his clinic I had an opportunity to see him perform a number of cholecystectomies and in each instance he employed drainage. With Professor Enderlen I would say: "In the fear of God and the peritoneum I am wedded to its use." It is really essential to drain; it is a safeguard and does no harm.

DR. R. B. CATTELL, Boston: The end-results following surgery in cases of gallstone disease are satisfactory. We have been very critical of our results. In patients with gallstones with the typical clinical symptoms, there were good results in 89 per cent. The end-results following cholecystostomy, however, are very unsatisfactory. A considerable number of people are relieved after cholecystostomy over a period of one, two or three years. But if the end-results from five to seventeen years are considered one will find that the incidence of relief following simple drainage of the gallbladder is low; in our series it has been below 30 per cent. The reason for that probably is there has been time for reformation of gallstones and for recurrent inflammation of the gallbladder and associated injury of the liver. We feel that in our own cases the majority of poor results after cholecystectomy follow mistakes in diagnosis; and as we have become more critical in deciding on operation we have obtained better results. In the small series presented in the discussion in which good results were obtained in less than half of the cases, it would suggest to us that operation was not clearly indicated in all these cases. Definite inflammation of the gallbladder or gallstones must be present if a high percentage of relief following cholecystectomy is expected.

The General Practitioner.—Some writers in the medical journals speak very disparagingly of the general practitioner. They seem to think he is fast passing away before the rapid strides of the specialist. They seem to think that the progress of the surgeon and the specialist has been so rapid and glorious that the general practitioner is lost in the glare of the flashing steel. And the medical colleges are not trying to turn out general practitioners, but specialists, surgeons and research workers. This is certainly very absurd because it has been proven that the majority of ailments are best treated by the general practitioner.—Kinsolving, W. S.: The Specialist and the General Practitioner, *Kentucky M. J.*, October, 1929.

CARCINOMA OF THE LOWER ESOPHAGUS AND UPPER THIRD OF THE STOMACH *

MAX EINHORN, M.D.
NEW YORK

In broaching the subject of malignant neoplasms of the lower esophagus and upper third of the stomach, I shall have to touch also on the topic of cardiospasm (malignant and benign) as a side issue; for, as is well known, dysphagia, the most prominent symptom of cardiospasm is also constantly encountered in esophageal neoplasms, and frequently in cancer of the upper third of the stomach. These conditions are intimately associated, and a recognition of the right ailment is essential for correct treatment. I have looked over the list of my private patients of the last three years (1926, 1927 and 1928) and find that there were altogether forty-four cases of cancer of the lower third of the esophagus, forty cases of cancer of the upper third of the stomach, and seventy-eight cases of benign cardiospasm.

Fig. 1.—Dilatation of esophagus and appearance of stricture near cardia.

The diagnosis of esophageal cancer is usually easy. There is present a gradually increasing dysphagia of comparatively short duration, from six weeks to two or three months, loss of weight, resistance to a bougie (39 to 42 F.) at from 12 to 16 inches, and a broken up and lengthened swallowing sound, or absence of a swallowing sound. Esophagoscopically, whitish tissue prominences in the strictured area can frequently be

* Read before the joint meeting of the Section on Gastro-Enterology and Proctology and the Section on Radiology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 11, 1929.

seen. Roentgen examination shows a defect in the filling of the esophageal lumen.

Occasionally, however, the growth involves the esophageal wall without constricting it; its recognition then becomes more difficult. In some of such cases I made a correct diagnosis by the aspirating bougie, finding on suction in the perforated olive, lodging within the cardia, bloody necrotized particles of bad smelling tissue, a particle at times showing under the microscope the structure of a neoplastic tissue. Here, also, the esophagoscope can be of great use.

Years ago I treated a patient who was gradually failing in health. He had no dysphagia and the gastric contents did not reveal anything extraordinary. When the stomach was washed, however, the water used to return at first clear, but when the tube had been withdrawn up to from one-half to one inch above the cardia, it would suddenly come up bloody. The washing was repeated a number of times with the same result. This

Fig. 2.—Incisure-like deformity in the upper third of the greater curvature of the stomach and a trickling down of barium from the esophagus into the stomach.

led me to a probable diagnosis of a beginning neoplasm at the cardia, which diagnosis later proved to be correct (operative observation).

In rare instances of cardiospasm of not too long duration in which there is encountered a resistance to the introduction of the bougie at the cardia, a diagnosis of a neoplasm appears to be justifiable. Even roentgenograms in such a case will lead to a similar conclusion, and notwithstanding all this evidence there is in reality no cancer present but merely a benign cardiospasm. This can be shown by the duodenal bucket string test and by the retrograde passage through the cardia of the pyloric dilator. Long ago I described a case of this type in my book on "Diseases of the Stomach." I shall here present briefly another similar new observation.

CASE 1.—Mrs. E. K., aged 45, had complained for the past nine months of inability to eat (dysphagia) and of frequent attacks of vomiting either during the meal or shortly afterward. She felt an almost constant oppression in the chest and slept poorly. During this period she lost more than 40 pounds (18 Kg.) and felt very weak. A roentgen examination of the gastro-intestinal tract was made by a specialist, and the diagnosis was "cancer of the cardia." When the patient consulted me I found the swallowing sound absent, and the bougie (41 F.) encountered a resistance at 16 inches from the lips but overcame it. I then had her under observation in the Lexington Hospital and the bucket string test showed that the bucket had passed both cardia and pylorus (there being bile below 23 inches on the string to the end). There was also a small blood stain on the string at 16½ inches from the lips. A diagnosis of a probable ulcer near the cardia with secondary benign cardiospasm was made. The patient was fed duodenally for two weeks, and then the cardia was stretched retrograde, first with the pyloric dilator and then with the dilating inflatable bougie. The patient regained her health completely, adding 40 pounds (18 Kg.), and is well now, after a period of three years.

Carcinoma of the upper third of the stomach (especially the posterior wall) on account of its inaccessibility to palpation frequently escapes recognition. The general symptoms of a malignant disease—gradual loss in strength and weight, and comparatively short period of disease—are present. In conjunction with these signs there exist gastric distress, lack of appetite and frequently dysphagia caused by a cardiospasm. The latter may be permeable or not, depending on the severity of the condition. In the permeable variety, the bougie after passing the cardia occasionally, if the growth protrudes into the interior of the stomach, encounters a resistance at from 18 to 19 inches from the lips. This becomes of great aid in making a positive diagnosis of a growth. In the impermeable cardiospasm atropinization and re-examination with the bougie, the duodenal bucket string test, and retrograde stretching tests become necessary. It is more or less characteristic for cardiospasm accompanying cancer of the stomach to show a steady development without any quiescent periods and to be of weeks' or of a few months' standing (not years). Of course there are exceptions to this rule; this concerns especially cardiospasm accompanying some cases of cholecystitis. Roentgen examination is naturally of great assistance, but in this particular region a negative roentgen finding is by no means a proof against the existence of a neoplasm.

Occasionally even an exploratory laparotomy fails to disclose a beginning growth in the posterior wall of the upper third of the stomach. I have records of three cases of this type in which an exploratory laparotomy had been undertaken with negative results in the stomach at the time of operation. In all of these patients the appendix was removed, and in one of them surgical drainage of the gallbladder was done in addition. All three patients continued to suffer after this intervention just the same as before. I had an opportunity to examine them from four to six weeks after the laparotomy. In one I could palpate a resistant small mass under the margin of the left ribs; in the two others I found a cardiospasm which I attributed to a probable neoplasm in the upper third of the stomach. In two of these patients the abdomen had been reopened and cancer of the stomach found, but in an inoperable stage. The third did not wish to undergo surgery again, but his steady progress for the worse speaks strongly for a malignant lesion.

Whether cardiospasm of comparatively short duration is malignant, i. e., due to a neoplasm of the stomach or to a severe gallbladder disturbance that can be cured and is therefore of a benign type, is at times difficult to decide. The majority of these cardiospasms, however, can be assumed to be malignant.

The following case of malignant cardiospasm is of great interest, as there was a combination of carcinoma of the upper third of the stomach and of a gallbladder filled with stones.

CASE 2.—M. R., a man, aged 45, seen, Nov. 23, 1928, complained that for the past six months dysphagia had been present and he had lost 25 pounds (11.3 Kg.). When he was examined by me there was no tumor palpable in the abdomen. The swallowing sound was greatly delayed, being present twenty-seven seconds after deglutition. A bougie (42 F.) passed the cardia and entered the stomach. The diagnosis was cardiospasm of a probably malignant type due to a beginning neoplasm of the stomach. Further examinations of the gastric contents showed hydrochloric acid, +; acid, 35. The duodenal bucket string test showed that the bucket passed through the cardia and pylorus, bile being present at the end of the string (below 24 inches), and there were no blood stains on the string. A sample of the duodenal contents examined in the fasting condition was alkaline and looked dark brown, almost black, and turbid; numerous cholesterol crystals were present.

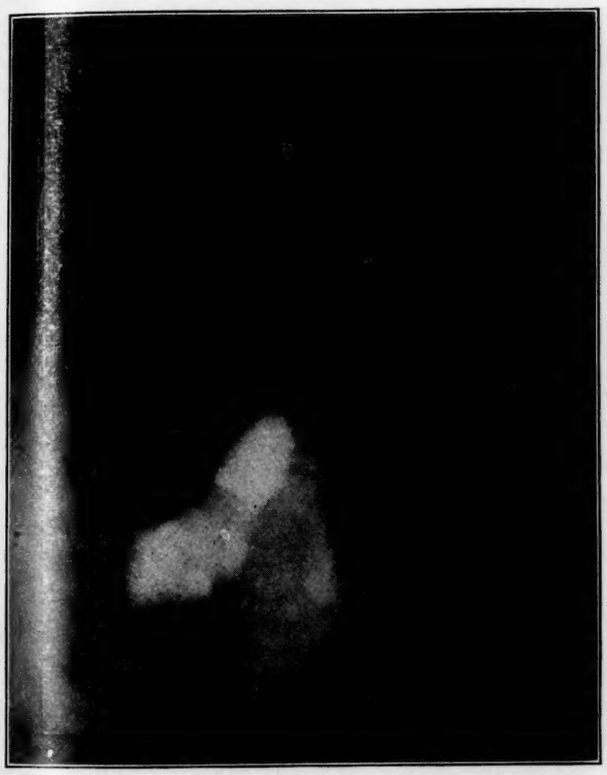

Fig. 3.—Gallbladder filled with stones after administration of tetraiodophenolphthalein.

A roentgen examination of the gallbladder after tetraiodophenolphthalein showed an elongated gallbladder filled with stones. Roentgen study of the gastro-intestinal tract by Dr. Fleck revealed an obstruction lesion (even to fluids) in the esophagus, above the cardiac orifice. The esophagus was slightly dilated. Fluids passed into the stomach in a continuous thin stream, through a narrow, slightly irregular channel. The cardiac end of the stomach was not grossly deformed by any tumor. The stomach was not enlarged. An incisure-like deformity was present in the midportion of the greater curvature, which might have been a spastic phenomenon. The duodenal cap filled only at the base, possibly because of gallbladder adhesions. At six hours a small residue was seen in the stomach, the rest of the meal being in the terminal ileum (figs. 1, 2 and 3).

Dr. Pickhardt coincided with me in the belief that an exploratory laparotomy was indicated in order to ascertain whether a neoplasm of the stomach was present. At the operation a neoplasm was found at the upper third of the stomach. Neither the cardia nor the pylorus was involved. The gallbladder was then naturally left alone. The patient died about a month later and the autopsy showed an ulcerating adenocarcinoma of the cardiac portion of the stomach invading all the walls to the peritoneum.

As a counterpart to this malignant case of cardiospasm with cancer of the stomach and gallstones, I had two other cases in which the roentgen diagnosis was a probable neoplasm of the stomach which, however, both turned out to be of a benign variety. In one the cause of the cardiospasm was cholecystitis with stones; in the other there was an ulcer of the lesser curvature near the cardia (similar to that in case 1). In both after careful observation a correct diagnosis was made. A cholecystectomy was done in one, and the other patient was treated by duodenal alimentation, and later on by retrograde stretching of the cardia, with complete recovery in both instances.

SUMMARY

1. In cancer of the esophagus, the bougie, the swallowing sound and the esophagoscope are of great assistance in making a diagnosis, which should be completed by a roentgen examination. If these procedures fail to show something definite and still there are persistent subjective symptoms indicating a severe lesion in the epigastric region, an examination with the aspirating bougie can be undertaken in the lower esophagus and cardia. Washing of the stomach and watching the result of the returning water for the appearance of blood after pulling up the stomach tube to the cardia, and then a trifle above it, is also at times of importance.

2. In carcinoma of the upper third of the stomach, frequent palpation in the epigastrium and under the margin of the left ribs, the introduction of a bougie into the stomach in order to ascertain whether there is a resistance at 18 or 19 inches from the lips, and roentgen examinations are important. Anorexia, gastric distress, loss in weight and continuous cardiospasm for a period of two or three months are suggestive of a growth in the vicinity of the cardia. The presence of occult blood frequently found in the stool is another item of significance with regard to a neoplasm.

In carefully observed cases a diagnosis will almost always be possible.

20 East Sixty-Third Street.

ABSTRACT OF DISCUSSION

DR. F. A. SPEIK, Los Angeles: I want to show an instrument for dilating devised by Dr. B. W. Sippy. The esophageal bulbs are attached to the spiral. First the patient swallows the silk thread and this wire is then passed over the silk thread as a guide, which prevents making a false passage. Then the bulb follows the wire as a guide. It frequently does happen, in spite of the fact that we are careful in the use of a whalebone bougie, that we may make a false passage, but if we use this Sippy instrument intelligently, we have little trouble. Dr. Sippy treated many cases of carcinoma of the esophagus with good results. He did not keep patients from dying, but he did make their last years comfortable.

DR. MAX EINHORN, New York: With regard to these dilators, I have devised one myself which is used successfully and is very simple. The instrument I use often, and especially lately, is for the cardia, but it can also be used for other purposes. The instrument that Dr. Speik has is a good one. Cardiospasm is usually combined with dilatation. I think that dilatation of the esophagus is a secondary condition. A patient will suffer for a while from a nervous condition, and cannot eat. If he takes a mouthful of food it sticks in the esophagus. The patient gets well after some nerve remedy has been given, but if in some cases the condition comes on often and the acute cardiospasm repeats itself frequently, the patient is not

able to eat. The patient takes food, fills up the esophagus, is obliged to take more food, and then takes a glassful of water, and either the water pushes the food down or he vomits. But usually in these chronic cases the patients learn how to eat. They fill up the esophagus and it becomes more filled all the time, and that leads to a chronic condition in which they cannot eat because there are things accumulated in the esophagus, so a dilatation of the esophagus is a consequence. If a dilatation of the esophagus exists, then it cannot work as does a normal esophagus. The walls are widened, and even if the cardia is not spasmodically closed, the folds of this outlet lie over each other in such a manner that nothing can come out from the stomach and if they fill it up with water nothing can enter the stomach. If anything is to come into the stomach, something (usually air) must come out of it in order to give space. It leads to a condition in which the antispasmodic remedies will not help any more because afterward it is an organic condition, with failure to perform its regular function. Here the overstretching of the cardia is of great significance. We must make it four times as big in order that the air can come out from the stomach into the esophagus, and that leads to the possibility of getting well. These patients can get well that way.

UROLOGY IN WOMEN AND IN GYNECOLOGY *

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Although the female urinary and generative organs, unlike those of the male, are two separate and distinct systems, they are closely connected anatomically, embryologically and to a certain extent physiologically, and while a lesion of the urinary tract is a urologic and not a gynecologic condition, some knowledge of gynecology is often essential to correct diagnosis and treatment.

Of the last 8,302 patients admitted to the Women's Clinic at Stanford University School of Medicine, 824, or 9.9 per cent, were referred to the female urology division because of urinary symptoms. Patients with gonorrhea, however, were treated in the gynecologic department. Urinary symtoms were entirely due to urinary tract disease in approximately 73 per cent of these cases, whereas pathologic and physiologic changes in the generative organs, although present in a larger proportion, were possible or probable etiologic factors in about 27 per cent; 28 per cent of the 8,302 patients were obstetric cases.

Stark [1] found, in a series of gynecologic patients, that 35 per cent complained of bladder irritability. Furniss [2] stated that 30 per cent of his gynecologic patients suffered from this condition. Bugbee,[3] in a series of 1,000 cases of frequency of urination, the most common urinary symptom of which women complain, found the etiologic factor in the generative organs in 24 per cent.

Important factors in the etiology, diagnosis, symptomatology, pathology and treatment of diseases of the urinary tract in women are the anatomic differences in the pelvic organs, the physiologic changes during menstruation, coitus and pregnancy, and the frequent pathologic conditions associated with both pregnancy and the puerperium. The shortness of the urethra, together with its close proximity to the vagina and rectum, has a direct bearing on the greater frequency of nongonorrheal urethritis and upper urinary tract infections in the female. Urethritis, which is usually associated with trigonitis, is responsible for the majority of cases of frequency of urination, the most common urinary disturbance in this sex. Because of the shortness and distensibility of the female urethra, the treatment of bladder lesions is greatly facilitated. Direct applications to the bladder wall and the introduction of forceps and other instruments through the urethroscope or alongside the cystoscope are simple procedures. The urologist will find it advantageous to perfect himself in the use of the Kelly as well as the lens type of cystoscope. Because of their close proximity, inflammatory processes, tumors and displacement of the female generative organs may affect the entire urinary tract by direct extension, by adhesions or by pressure. The accessibility of the bladder and lower ends of the ureters to vaginal palpation is of great assistance at times in the diagnosis of inflammatory conditions of the bladder wall and ureters. Tumors and foreign bodies, tuberculosis of the ureters and stones in the lower ends of the ureters may be diagnosed by this procedure.

Fig. 1.—Typical pyelogram showing bilateral, hydronephrosis and dilated ureters during pregnancy.

During pregnancy the enlarged uterus is usually responsible for the customary dilatation of the ureters and renal pelves either through direct (fig. 1) pressure or because of the frequent kinking, stretching and torsion of the ureters due to the enlargement of this organ. Hofbauer [4] has recently demonstrated that fibrosis and muscle hypertrophy occur in the lower ends of the ureters during pregnancy. He believes that this con-

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* From Stanford University School of Medicine.
* Read before the Section on Urology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 12, 1929.

1. Stark, G. W.: Irritable Bladder in Women, New York State J. Med. **17**: 549 (Dec.) 1917.
2. Furniss, H. D.: Renal and Ureteral Conditions in Women, Am. J. Surg. **31**: 257 (Oct.) 1917.
3. Bugbee, H. G.: Frequency of Urination in Women, J. A. M. A. **68**: 693 (March 3) 1917.
4. Hofbauer, J. I.: Studies on Etiology of Pyelitis in Pregnancy, New England J. Med. **198**: 427-441 (April 19) 1928.

dition is responsible for narrowing of the ureters at these points and consequently for the dilatation and infection of the upper portion of the ureters and kidney pelves. Regardless of the cause of the obstruction, infection of the kidneys or the exacerbation of a low grade infection already present readily occurs. The pregnant uterus is likewise responsible through pressure (fig. 2) or traction for the bladder disturbances so common during this period. During every labor the bladder sustains more or less injury. Residual urine will be found in three fourths of all bladders after parturition and this is a common etiologic factor in postpartum infections of the upper urinary tract. The traumatism accompanying childbirth is also frequently responsible for laceration of the bladder sphincter, cystocele, and vesicovaginal, urethrovaginal and ureterovaginal fistulas.

Fig. 2.—Obstruction of the right ureter due to pressure by the pregnant uterus.

In the presence of slight pathologic conditions not previously noticed by the patient, the congestion of all the pelvic organs incident to menstruation and coitus may be sufficient to produce symptoms. The intimate relationship existing between the lymphatic, nerve and venous plexuses of the female generative and urinary organs is likewise of much significance. The greater susceptibility of the female bladder to direct and reflex influences has always been recognized.

Pathologic conditions of the female generative organs which are frequently responsible for urinary tract symptoms are displacement of the uterus, tumors of the uterus, metritis, cervicitis, endocervicitis, parametritis, salpingitis, ectopic pregnancy, ovaritis, tumors of the ovary, tumors and inflammatory processes in the broad ligament and vaginitis. It is not uncommon for patients with pelvic inflammatory conditions to complain of pain as high as the kidney region, notwithstanding the absence of urinary tract disease.

Not infrequently the bladder and ureters are injured during gynecologic operations. The latter could often be avoided by the preliminary insertion of catheters into the ureters. Postoperative adhesions and scar tissue also involve the bladder and ureters at times. Partial or complete retention of urine is usually present following pelvic operations. It occurred after every major gynecologic operation in a large series of cases at Stanford University School of Medicine. Pyelitis is also a common postoperative complication and patients often state that their urinary symptoms followed pelvic operations.

The more common urinary conditions responsible for symptoms of generative tract disease are: caruncles and other urethral growths and inflammatory conditions of the urethra, bladder and ureters. These are often responsible for dyspareunia and vaginismus. Hunner states that dysmenorrhea is frequently due to ureteral strictures. Elusive ulcers of the bladder have been responsible for many unnecessary operations on the female pelvic organs.

As pathologic conditions of the urinary and generative organs frequently occur in the same patient, both tracts should be investigated prior to operation or treatment. Many gynecologic operations have been followed by a prolonged convalescence and even death because of the neglect of this precaution.

In the last 633 private and clinic female urologic patients coming under our observation we found the most common pathologic conditions to be: urethral stricture, urethritis and trigonitis, pyelitis and ureteral stricture.

PYELITIS DURING PREGNANCY

Pyelitis was found during pregnancy in thirty-nine, or a little less than 1 per cent, of 3,642 consecutive cases seen in the obstetric department of Stanford University School of Medicine. We do not believe that these figures present the true incidence of this condition, many cases being overlooked because insufficient importance is attached to urinary symptoms occurring during this period.

If the pyelitis does not respond to more conservative treatment, the renal pelves should be drained and irrigated with silver nitrate or other solutions through ureteral catheters. Retention of the ureteral catheter for one or more days is at times advantageous, although many patients cannot tolerate this procedure because of the mechanical irritation caused by the catheter. Although the symptoms may point to the involvement of but one kidney, both ureters should be catheterized and urine obtained for culture and microscopic examination. We have seldom seen a case in which ureteral catheterization presented any particular difficulty, even as late as the ninth month of pregnancy, and we are not in accord with those who believe that induction of premature labor, nephrotomy or nephrectomy is frequently required. Nothwithstanding the disappearance of subjective symptoms following treatment or the termination of pregnancy, treatment should be continued until the infection has disappeared.

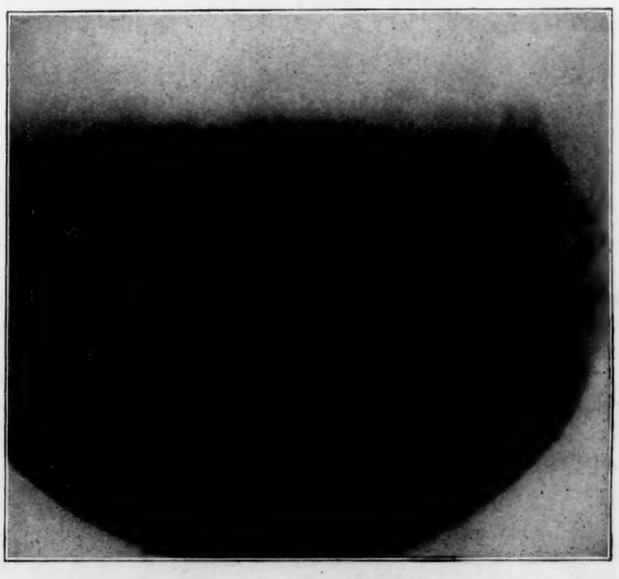

Fig. 3.—Effect of pressure by the fetal head on the bladder.

In the presence of residual urine during pregnancy or the puerperium, the bladder should be irrigated with silver nitrate or other antiseptic solutions until the infection has disappeared.

TUBERCULOSIS OF THE KIDNEY DURING PREGNANCY

Tuberculosis of the kidney during pregnancy is surprisingly uncommon, and few cases have been reported in the literature. In a former publication one of us stated that but one case had been found in 3,103 patients admitted to the obstetric department of Stanford University School of Medicine. No further cases have been found in 2,332 additional cases.

We have seen one other case. This occurred in private practice.

No satisfactory explanation has been given for the infrequency of this condition although we believe that, like pyelitis during pregnancy, it is sometimes overlooked.

Pugh,[5] in a recent publication on this subject, states that not one case of tuberculosis of the kidney was found in 6,000 consecutive cases in an institution with a large maternity service. This writer has added three cases to the literature, two seen by him and one by a colleague.

Fig. 4.—Ectopic left kidney.

It has repeatedly been proved that nephrectomy is tolerated well during pregnancy; consequently, this procedure is almost always indicated when the infection is limited to one kidney.

RENAL DYSTOPIA

Four fifths of the cases of renal dystopia occur in women. Prolapse of the right kidney is common in this sex.

One of our patients, a nurse, aged 22, single, complained of a dull ache to a stabbing pain in the left upper abdominal quadrant and pain in the epigastrium. Urination was difficult at times and occasionally painful. She also complained of irregular and painful menstruation, flatulence, nausea after eating, constipation and loss of weight. A number 8 bulb catheter encountered obstructions in the left ureter about 5 and 8 cm. from the ureterovesical orifice. The urine of the left kidney was culturally and microscopically normal. The bladder urine was microscopically normal except for a few staphylococci found on culture. Pyelo-ureterography in the flat, upright and Trendelenburg positions revealed an immobile ectopic left kidney (fig. 3) in front of the sacrum. Its pelvis was small and distorted. The right kidney appeared normal. The uterus was retroverted. All symptoms improved following removal of the ectopic kidney and a modified Gilliam suspension of the uterus. The kidney was somewhat irregular in shape. Its pelvis was small and contained a relatively large amount of fat.

5. Pugh, W. S.: Ann. Surg. **86**: 591 (Oct.) 1927.

URETERAL STRICTURE

Ureteral strictures are also more common in the female. We found them in 11.3 per cent of our urologic cases in this sex. In our last 450 male urologic cases we found ureteral strictures in 5.5 per cent. Previous to Hunner's important contributions to this subject, they were frequently overlooked; but we feel that the pendulum has now swung too far in the opposite direction and strictures are frequently diagnosed when other conditions are responsible for symptoms ascribed to them. We have had no reason to change an opinion[6] expressed some years ago that urethral strictures are much more numerous than ureteral strictures and that the symptomatic improvement apparently derived from dilation of the ureter has often been the result of dilation of the urethra by the cystoscope or the urethroscope used in the former procedure.

As ureteral strictures are more common in the female, we believe that inflammatory processes or foci of infection in the female generative organs are more often responsible for this condition than the teeth, tonsils or other more distant foci of infection. A diagnosis of stricture in the lumen of the ureter should not be made merely because of a tug or hang on withdrawal of a bulb catheter or bougie. Additional evidence, such as dilatation of the ureter above the supposed obstruction or improvement following dilation of the ureter, is necessary.

Blasucci or Garceau catheters or bougies are preferable for the treatment of ureteral strictures, as with these dilatation is more gradual and more prolonged and they produce less pain and trauma than wax, silk or metal bulbed instruments.

INTERSTITIAL CYSTITIS

Interstitial cystitis is much more common in women. We see almost as many female as male urologic patients but have never seen a single instance of this condition in men.

The etiology of interstitial cystitis is uncertain, but in view of its greater frequency in women the correctness of the theory that distant foci of infection, such as the teeth, tonsils and sinuses, are the principal factors is questionable. We believe that the focus is more apt to be found in the female pelvic organs.

An occasional case of interstitial cystitis will respond to almost any method of treatment. Others seem to be incurable. Resection and fulguration are the most valuable methods of treatment, although in one of our cases improvement followed dilations of the bladder and instillations of 1 per cent basic fuchsin solution; another responded to dilations of the bladder and the direct application of 10 per cent silver nitrate solution. Urethritis is usually associated with this condition and should receive appropriate treatment. Intra-urinary and extra-urinary tract foci of infection should likewise be eradicated if possible.

6. Stevens, W. E.: Urology in Women, J. A. M. A. **81**: 1917-1923 (Dec. 8) 1923.

Vesicovaginal, ureterovaginal and urethrovaginal fistulas are frequently responsible for incontinence of urine in women. These fistulas have sometimes been found in the absence of history of childbirth, trauma or operative procedures. Aberrant or supernumerary ureters may also be responsible for incontinence.

A single woman, aged 62, complained of dribbling of urine, worse on standing or walking since an operation for "abdominal tumors" one and one-half years previously. She had had numerous bladder irrigations because of an infection which occurred at the time of operation. Some improvement followed this procedure. A vaginal operation for "tumors of the uterus" had been performed thirty years before. She did not know that the uterus had been removed. Examination revealed a large ventral hernia, a stricture of the urethra, cystitis, pyelonephritis and a small opening in the median line of the bladder just behind the trigon. It was impossible to insert a catheter more than 1 cm. into this opening. A cystogram showed a somewhat irregular bladder and a small diverticulum in its upper right lateral wall. The vagina was also outlined by some of the iodide solution which had escaped through a vesicovaginal fistula (fig. 4).

Ridges or folds in an empty or partially filled inflamed bladder are sometimes mistaken for tumors. We know of one patient that was operated on because of this mistaken diagnosis.

URETHRA

Interesting conditions limited to or more common in the female urethra are caruncle, a condition having no analogue in the male, urethrovaginal fistula, obstructions of the urethra from pressure, prolapse of the urethra, sagging of the posterior wall, which is to be differentiated from urethrocele, and which is not necessarily accompanied by a cystocele, and nonspecific urethritis, associated in the majority of cases with trigonitis.

In a series of eighteen cases of urinary fistulas we found urethrovaginal fistulas in two cases. Cures have been reported following fulguration, also by the application of silver nitrate. Both of our cases required operative procedures.

Strictures of the female urethra, although less common than in the male, are of sufficient frequency to warrant brief mention. Fortunately they are now receiving more attention from both urologists and gynecologists and their importance as etiologic factors in genito-urinary disturbances in women and female children is finally gaining recognition. In our last series of 633 cases we found urethral strictures in 30 per cent.

In a former series [6] of 169 cases mentioned in 1923, urethral stricture was found in ninety-four, or 55.4 per cent. While obstructions of rather large caliber both in the lumen of the canal and at the external urethral meatus were included, the fact nevertheless remains that urethral strictures are common in women. The marked improvement following a single dilation of a urethral stricture is sometimes amazing.

One of our patients had suffered from complete retention of urine for a period of three days because of a stricture in the posterior third of the urethra. Because of the distention of the bladder, a diagnosis of tumor had been made in this case.

Other conditions responsible for partial or complete obstruction of the urethra are tumors of the uterus and ovaries. The following cases are interesting in this connection:

A married woman, aged 64, had been obliged to urinate from six to eight times during the day and every half hour during the night for the previous two months. She also complained of pain at the end of urination and a desire to defecate during the emptying of the bladder. A fibroid and cystic uterus had been removed one and one-half years before she came under our observation. The urethra was obstructed 2 cm. from the external meatus. Vaginal examination revealed a large pear shaped mass between the vagina and the rectum which pressed the urethra forward against the pubic bones. This proved to be a large malignant multilocular ovarian cyst.

Another patient complained of frequent urination, a burning sensation at the beginning of urination, and pain in the right lower quadrant of the abdomen and lumbar regions. A sound introduced into the urethra was deflected to either side at the point of obstruction. Examination revealed obstruction of the urethra caused by marked anteflexion of a pregnant uterus.

CONCLUSIONS

In the presence of urinary symptoms referable to the female pelvic organs, both the generative and the urinary tracts should be investigated.

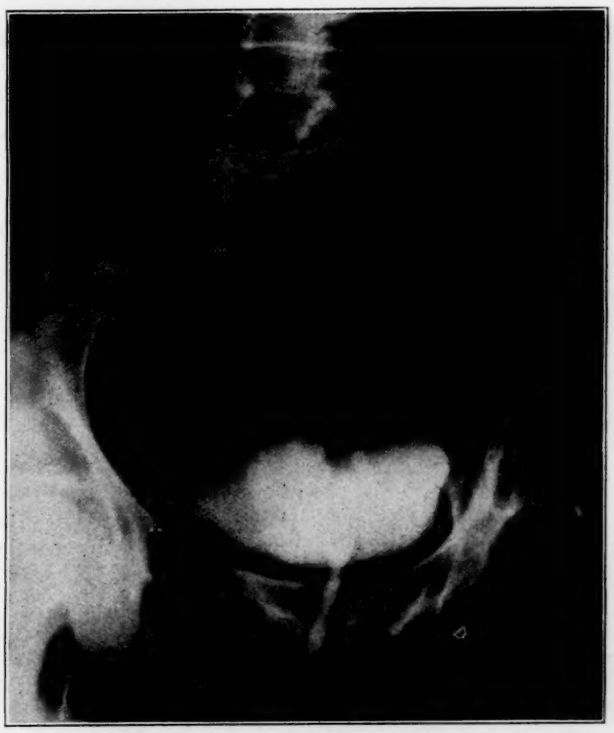

Fig. 5.—Vagina outlined following the escape of sodium iodide solution through a very small bladder opening in a patient with vesicovaginal fistula.

Because of the frequency with which pathologic conditions of the female generative organs are responsible for urinary tract symptoms and disease it is essential that the urologist should have some training in gynecology. We do not wish to infer, however, that pathologic conditions of the female urinary tract are gynecologic conditions.

Flood Building.

ABSTRACT OF DISCUSSION

DR. M. B. WESSON, San Francisco: It is interesting to note that the authors are still emphasizing the importance of recognizing urethral strictures in the female. Dr. Stevens was at it long before Dr. Hunner brought ureteral strictures into prominence and he still believes that many of the good results attributed to stretching the ureter should be credited to the dilation of the urethra. I agree with him that pyelitis of pregnancy is a comparatively harmless infection if treatment is carried out as though no pregnancy existed. Several years

ago I saw an exceedingly toxic woman, six months' pregnant, with a large tender right kidney and a temperature of 105 F. The head of the cystoscopic table was depressed and a number 8 catheter passed with ease. Assisted by aspiration, 300 cc. of pus was withdrawn. The patient aborted a dead fetus the following day and developed double lobar pneumonia. A catheter was left in place for ten days and irrigations were done hourly with 3 per cent mercurochrome. Three months later the patient showed an uninfected urine. I doubt whether such results can be obtained in any pyelitis but that of pregnancy. Another point Dr. Stevens emphasized is the necessity of avoiding postoperative catheterization because of the cystitis that is prone to follow. A few years ago Plaggemeyer spectacularly called attention to the dangers of routine catheterization by showing that patients with paralysis from broken backs who did not immediately succumb to the injuries died from kidney infection following bladder catheterization, whereas those that were allowed to develop automatic bladders survived. Recently, Glenn Craig found in the gynecology clinic at Johns Hopkins Hospital that an edema of the bladder was common following pelvic surgery, so, while the patient was still anesthetized, 1 ounce (30 cc.) of 0.5 per cent mercurochrome solution was instilled into the bladder and 1,200 cc. of 5 per cent dextrose solution with 60 per cent liquid petrolatum was injected into the rectum. This was sufficient in most cases to cause spontaneous voiding in a few hours. The procedure is simple and harmless and may be the means of preventing postoperative cystitis and pyelitis.

Dr. Hermon C. Bumpus, Jr., Rochester, Minn.: In his original contribution relative to the elusive ulcer of the bladder, Dr. Hunner stated that it was his belief that the disease was of focal origin. Some years ago at the Mayo Clinic we were able to produce similar lesions in the bladders of animals by the intravenous injection of organisms obtained from the devitalized teeth and septic tonsils of patients suffering from this disease. More recently this work has been extended, organisms being obtained from the cervix with equally striking results. The treatment is a point of great interest, because it has been so unsatisfactory. When we resected, improvement was infrequent, and then we tried fulguration. I was so unfortunate as to fulgurate in one case in which fulguration had been done several times before, and the blood supply was so deficient from cicatricial changes that gangrene and sloughing set in. I wondered whether the improvement in these cases was due to the fulguration or to the distention that occurred as the result of the anesthetic, because we always anesthetized at the time of fulguration. In the last few cases I have just anesthetized these patients and overdistended the bladder, and it is remarkable how much they are relieved. After one such treatment individuals who have been getting up ten and twelve times a night have slept right through the night.

Dr. Clyde W. Collings, New York: In our female clinic at New York University we seldom find infection of the upper urinary tract in patients with frequent urination and dysuria. The bladder often appears normal. The cause of frequency is found in the urethra, viz., inflammation, polyps, exuberant granulations or caruncles. We usually relieve the symptoms by dilating with sounds, by the topical application of silver nitrate through the Young tube or by resection of the polyps; caruncles are treated by the high frequency cutting current through the urethroscope.

Dr. Gilbert J. Thomas, Minneapolis: A large experience with gynecologic cases has convinced me that they are not referred to the urologist often enough. The urethra and the bladder are not examined when the urine and the roentgenogram of the kidneys and bladder are negative. We must not forget that there may be disease in the female urethra which may not produce cellular elements in the urine that would help in the diagnosis. Often, when the urine is normal, the frequency of urination by the patient is disregarded, particularly if she has had a recent operation or catheterization. From my experience I find that many women who complain of frequency and who have a normal urine are relieved by dilation of the urethra and by the injection of medicine into the neck of the bladder and along the urethra. In older women I have noted a condition which is more often seen in the male and which may be called a senile cystitis. It resists all treatment that I know of and occurs in women who have no demonstrable pathologic condition of the bladder or kidneys. In my experience, the elusive ulcer which occurs in the bladder is frequently overlooked by the gynecologist. On many occasions he has found tenderness over the bladder on abdominal palpation and has suspected the presence of tumor of the bladder. In many instances the patient has not been referred for urologic study because the urine was negative at the time of examination. The tenderness observed was thought to be due to a cystic ovary. I have found so-called elusive or panmural ulcer to be the cause of the symptoms just described. I have had some difficulty in inducing the gynecologists and obstetricians to refer every pregnant woman with pus in the urine to the urologic service for study. I have emphasized the necessity of being just as careful in watching for pus cells in the pregnant woman's urine as for albumin. When pus is found the patient should be referred immediately to the urologic service. When we find evidence of retention in the ureter or kidney pelvis in the pregnant woman, we inject silver nitrate or mercurochrome and try to prevent the development of infection. When infected hydro-ureter or hydronephrosis is found, we have had good results from the introduction of indwelling ureteral catheters. In some instances this procedure has stopped vomiting of pregnancy. I think it should be used more often in this type of individual, particularly just before term, when the retention is greatest.

Dr. Paul Ferrier, Pasadena, Calif.: So many urologists consider only the male condition that I think we are not all as appreciative as Drs. Stevens and Henderson of conditions in the female. One condition which they emphasized has recently been found more often in our part of the country than before, and that is polyps at the bladder neck, which are not usually seen unless we use the cystoscope. I think they are often missed, but if they are fulgurated we can cure these women. Dr. Curtis of Chicago has insisted that if a patient is catheterized once during pregnancy she should be catheterized until there is no residual urine, and by this means in certain services that I know of the treatment of these conditions has greatly progressed.

Dr. Charles F. Engels, Tacoma, Wash.: I wish to corroborate Dr. Thomas' experience in relieving the excessive vomiting of pregnancy by instituting ureteral drainage. I wish also to make two points in discussing this paper that I have not heard mentioned. One is that one of the things we encounter is a fibrosity of the meatus which is relieved readily by meatotomy. I touch the incised surface with silver nitrate. The second point is that my female patients are always prepared by a nurse in the usual surgical manner. In one case, on inserting a cystoscope, I found a markedly convex trigon, which puzzled me for a while, until I found that the nurse had meticulously packed the vagina with a wad of cotton so that it was impossible to see the ureteral orifice over the convexity.

Dr. Alexander H. Peacock, Seattle: Drs. Stevens and Henderson have shown the urologists a field that has been somewhat neglected. I wish to mention two gynecologic types: The first is the patient with hematuria. On routine examination in these cases smears are often positive for gonococcus infection. This shows a superficial examination on the part of the man who refers the patient, and it also teaches us that in all these patients a routine Wassermann test, with smears from the urethra and cervix, should be made. Another type of case commonly referred to the urologist for diagnosis is the patient with frequency of urination. It is surprising how many times this is due to tumors of the pelvis. I think urologists should train themselves to make gynecologic examinations. A woman with a large tumor of the uterus, and a positive blood Wassermann reaction, was referred back to her physician with the recommendation that she be put on arsphenamine therapy and that all operative work in the pelvis be delayed. She returned in three months with the uterus of normal size and the frequency gone. I believe urologist should always make careful gynecologic examinations, for frequently these patients are referred to us without such an examination and it causes great chagrin to miss extra-urologic conditions.

Dr. Charles P. Mathé, San Francisco: I am particularly interested in the factor of mechanical obstruction due to the

gravid uterus in the production of pyelonephritis of pregnancy. There is no doubt that the fetus makes actual pressure on the ureter in women suffering from this condition, causing stasis and predisposing the kidney to infection. In some cases there is an exacerbation of a preexisting infection as a result of this back pressure. The rôle of mechanical obstruction is demonstrated by the x-rays and by the clinical fact that the compressed ureter can be released by allowing it to fall away by gravity, which is accomplished by placing the patient in the extreme Trendelenburg position, as suggested by Bransford Lewis many years ago, or by manually pushing the organ aside. Another factor in the persistence of chronic pyelonephritis is the continuance of infection in the primary focus, which among other organs and structures in the female is often found to be located in the uterus and fallopian tubes. Urologists should not neglect this fact and should refer patients back to the gynecologist for proper treatment of this focus in order to clear up this type of chronic pyelonephritis.

DR. WILLIAM E. STEVENS, San Francisco: We have also observed that women of advanced age do not respond to treatment as readily as younger women. It is occasionally necessary to incise a stricture at the external urethral meatus, although, as a rule, the female urethra is much more responsive to dilation than that of the male. We do not seem to have the same good fortune with retention catheters as Dr. Thomas and many other urologists have had. Most of our patients, especially those with pyelitis during pregnancy, complain of a great deal of discomfort after twenty-four hours, and it has often been necessary to withdraw the catheters.

DEFORMITIES IN PYELOGRAMS

THREE CASES INVOLVING IMPORTANT DIFFERENTIAL DIAGNOSIS *

M. A. NICHOLSON, M.D.
DULUTH, MINN

Pyelograms have been made and studied in such a vast number of cases that the ordinary variations of the normal pelvis are fairly familiar to all. Abnormal pyelograms have been studied and classified, so that from these alone a fair assumption as to the pathologic conditions in a given case may be made. A voluminous literature has grown up on this subject, including larger works, such as the excellent monograph of Dr. Braasch.

Nevertheless, few subjects in medicine may be said to involve no further need for elucidation. Malignancy remains a common criterion for nephrectomy, granted obviously that the other kidney is functioning well. Therefore, in cases in which there is hematuria, pain, palpable enlargement, or loss of weight the additional finding of defects in the pyelogram furnishes a basis for logical surgical intervention. Nephrectomy is, however, an important surgical adventure, and calls for an accuracy in diagnosis that needs little defense.

Deformities include those due to cystic formation, those due to mass pressure (either pulling out of calices or obliteration) and those in which there is torsion, on any combination of these. When there is active growth of a tumor the contour of the pelvis changes, as noted by pyelograms taken from time to time. Hypernephroma, for instance, may develop rapidly and metastases occur early, so that to wait is often disastrous. This is in contrast with benign pathologic conditions, such as cysts, in which the picture will often remain the same over a long period. To distinguish between these two conditions is often difficult, and the history and other observations in the case tend to throw the balance one way or the other. On the other hand, the deformity may be so conclusive that it outweighs all other evidence.

The following cases illustrate the discrepancies that may occur between the diagnoses and the actual pathologic conditions causing the changes in the pyelograms. The explanation of the deformities in the pyelograms does not always take in the whole pathologic change in the kidney but may mask the active malignant condition.

REPORT OF CASES

CASE 1.—Mrs. S., white, aged 55, the mother of three children, whose family history is without bearing on the case, twenty years before had an operation on the uterus, and for the past three years has been treated for diabetes mellitus, which is now well under control.

Her present symptoms began Dec. 7, 1926, two weeks previous to her first visit. She complained of frequency of urination, with burning, and a dull pain in the right flank.

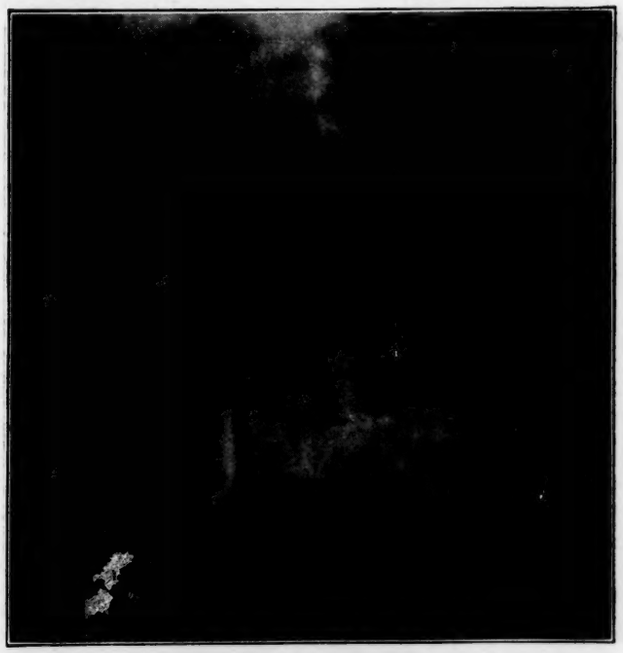

Fig. 1 (case 1).—Right kidney pelvis showing deformed calices.

She was well nourished, and the routine physical observations were normal except for some tenderness in the right groin. The urine was free from albumin and sugar and microscopically showed numerous pus cells.

A cystoscopic examination was made the following day. The urethra was normal. The appearance of the bladder was normal, and the ureteral orifices were found in the usual position and functioning normally. Catheters were passed without obstruction into each kidney pelvis, and clear urine was obtained from each side. Indigo carmine was returned in concentration from the two sides simultaneously in five minutes. The pyelogram of the right kidney pelvis (fig. 1) appeared opposite the body of the second lumbar, of ordinary size, but the calices were considerably deformed. One upper calix was constricted, the other cut off. The lateral calices were rather attenuated.

To sum up, a woman, aged 55, had frequency of urination, pain in the kidney region, and a marked defect in the pyelogram. A nephrectomy was advised, the pyelogram weighing heavy in the balance.

At operation a kidney weighing 176 Gm. was removed. A few small nodules could be felt, but otherwise its appearance was about normal. Section, however, showed an abnormal lobe formation of the upper pole, which separated this part from

* From the Duluth Clinic.
* Read before the Section on Urology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 12, 1929.

the rest of the kidney. The pelvis of the kidney sent a branch into the abnormally located part, which caused the pelvis to take on a distorted shape. Cut surface of the kidney showed whitish tumors located partly in the medullar substance and partly in the cortical, these being formed by rather tough connective tissue. There were a few atrophic tubules embedded in the tumor tissue. The tumor tissue showed slight infiltration into the normal tissue.

A diagnosis of multiple fibromas of the kidney was made.

Here the defect in the pyelogram was due to an anomalous lobe formation, but incidentally there were multiple fibromas present, and the tumor tissue was infiltrating into the normal tissue. Pyelograms at intervals would have shown this defect unchanging, but in the event of a malignant condition precious time would have been lost.

CASE 2.—Mrs. M., aged 54, had four children living and well. Her family history was negative. She had pleurisy twenty years before, and a uterine operation eighteen years before. Menstruation was ceasing.

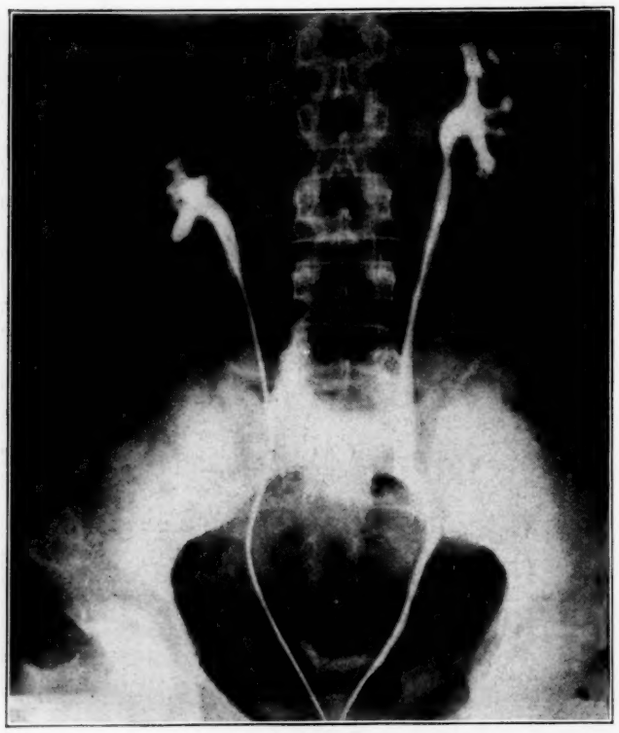

Fig. 2 (case 2).—Contracted pelvis on right and compression deformity of one of the upper calices on left side.

Her presenting symptoms were dysuria and frequency of urination, but she had had attacks of these symptoms for the last fourteen years. For a short time she had pain in the left upper portion of the lumbar region. The patient was well nourished, but thought she had lost some weight. All the teeth had been extracted; the nose and throat were normal. The chest and abdomen were normal except for slight tenderness on the left side.

A cystoscopic examination showed that the urethra and bladder were normal. The red blood cells were numerous in the urine of the left kidney; the urine of the right kidney was normal. Indigo carmine returned in five minutes on each side. A double pyelogram showed on the right side a contracted pelvis of chronic pyelitis; on the left side, a compression deformity of one of the upper calices. A second pyelogram a week later showed the same deformity.

Here the age of the patient, the continuous pain, and hematuria, together with deformity, led me to suspect a malignant condition.

A nephrectomy was done a few days later and a rather normal looking kidney was removed. The gross pathologic report showed this to be a kidney weighing 90 Gm., and measuring, 9, 0.4, 0.3 and 2 cm. On the cut surface the pelvis of the kidney was somewhat dilated; the papillae were somewhat flattened, mainly in the upper part of the pelvis of the kidney. The mucosa of the pelvis showed several diffuse hemorrhages and was edematous. The surface of the kidney showed several retracted areas, with increased consistency. On the cut surface the markings were still fairly distinct; in the upper pole there was a quite congested area, fairly definitely limited, in which several cysts, measuring 1 cm. in diameter and less, were found. The internal surface of these cysts was smooth, and their lumen was filled with watery, slightly yellow fluid. The renal artery showed moderate arteriosclerotic changes, which were more marked in the branch to the upper pole.

Microscopically the tissue from the upper pole was very congested; several tubules contained red blood cells and coagulated albuminous material. In the retracted areas, and mainly around the cystic formations, numerous glomeruli were hyaline; the tubules were sometimes dilated and filled with coagulated albuminous material and occasionally hyaline casts and desquamated epithelial cells. Several tubules were quite atrophic. The interstitial connective tissue was there quite markedly increased, and infiltrated diffusely with lymphocytic cells and less numerous plasma cells. The smaller arteries showed marked arteriosclerotic changes and thickening of their intima.

The mucosa of the pelvis showed signs of chronic inflammation, marked edema, moderate proliferation of the connective tissue cells, marked perivascular lymphocytic infiltration, and also a few polymorphonuclear cells and extensive diffuse hemorrhages.

The hematuria was due to arteriosclerotic changes, but the defect, small as it was, was accurately accounted for by the small cysts in the upper pole. All pain ceased after removal of the kidney and has not recurred.

The patient seen one year later had good kidney function and normal blood urea (14) and creatinine (1.9).

CASE 3.—Mrs. D., a widow, aged 69, had six children living and well. She had had scarlet fever, smallpox and pneumonia; the menopause occurred at 50, and the patient was said to have had hypertension. Her initial symptom was sudden severe pain in the right kidney, radiating into the thigh, which began three weeks before. A urine examination the next day showed many red blood cells. The pain, although less severe, remained.

The patient showed good nutrition. The head, neck and chest observations were normal. There was a palpable mass in the right side of the abdomen. The blood observations were normal, including urea (15) and creatinine (1.7). The urine showed occasional red blood cells. The blood pressure was 160 systolic and 100 diastolic.

When the cystoscopic examination was made the urethra and bladder appeared normal. The ureteral orifices were normal in position and appearance and were functioning rhythmically. Number 6 catheters were passed into each kidney pelvis a distance of 25 cm. and clear urine was obtained. A phenolsulphonphthalein test gave on the left 5 per cent, and on the right side 2 per cent, in twenty minutes. A double pyelogram was made, and repeated on the right. The left pelvis was opposite the second lumbar vertebra, with well filled calices. The right side showed a slightly distended pelvis, with three or four calices coming off the lower half. The upper one of the calices was frayed and there were no calices extending from the upper half of the pelvis.

Here the age of the patient, hematuria, pain and the defect in the pyelogram were considered ample evidence of a malignant condition. A flat plate did not show any stone shadows; there were no metastases in the bones.

The kidney was removed and found to be quite large. It weighed 240 Gm. The upper pole of the kidney was occupied by a large hemorrhagic mass measuring about 3.5 cm. in diameter. At one place, within the hemorrhagic mass, there was a large artery which was very much arteriosclerotic and apparently ruptured inside of the tumor. The hemorrhage spread below the capsule of the kidney, and the superficial layers of the kidney tissue were infarcted and necrotic. At one place in the tumor a somewhat whitish area was found, which was also infiltrated with hemorrhages. Grossly, then, it appeared to be a benign hemorrhage, but a careful microscopic

study showed that at the edges of the hemorrhagic mass the surrounding tissue showed proliferation of the connective tissue, and sometimes beginning organization of the hemorrhagic material. At a few places nests of necrotic tumor masses could still be recognized, often formed by large cells with clear protoplasm and distinct limits. These cells sometimes formed papillae. In some places the cells of the tumor showed quite marked irregularities in the shape of the nuclei. The tumor should be considered malignant.

COMMENT

In each of these cases the pyelogram was the visual and deciding evidence for nephrectomy, and in each it was due to a pathologic condition. Not in any of them, however, was the lesion producing the deformity such as to justify this major procedure, unless in case 2 (fibroma) there were malignant possibilities.

In this case the deformity of the pyelogram, as well as the pain, was most likely due to the hematoma. The hematuria noted diagnostically and the hemorrhagic state found at operation were assumed to be associated (essential?) with the patient's arteriosclerosis. In fact, the interrelation of tumor and this background remains obscure.

SUMMARY

In each of three cases a deformity in the pyelogram supported other observations in the case strongly pointing to a malignant condition. The defect in each case was produced by benign pathologic changes, but in one of these this benign pathologic change was in turn produced by a malignant condition. In another case the whole condition was benign, but the other symptoms were strongly in favor of a diagnosis of malignant growth. The peculiar anomaly in the other case is so infrequent that it would be almost impossible to differentiate the pyelogram from one of a true malignant condition.

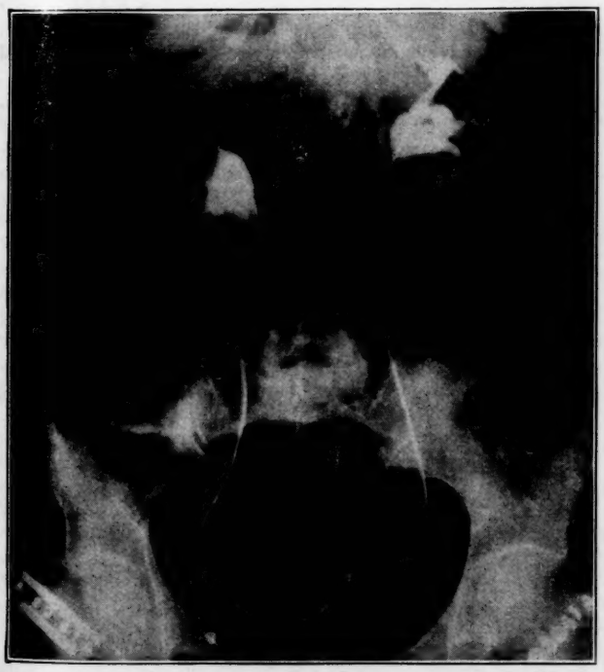

Fig. 3 (case 3).—Well filled calices on left; on right, slightly distended pelvis with three or four calices coming off of the lower half.

CONCLUSIONS

1. Early malignant growth in the kidney demands nephrectomy.

2. Nephrectomy should be decided on before operation, as the gross appearance of the kidney or the lesion may be entirely misleading, as in case 2.

3. True deformities in pyelograms are almost invariably caused by pathologic changes, and the other symptoms of malignant conditions are usually sufficient to make the diagnosis.

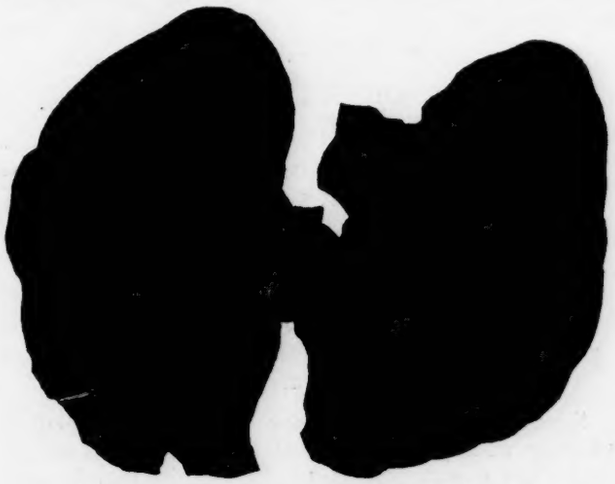

Fig. 4 (case 3).—Appearance of gross specimen.

4. It becomes a delicate question whether or not one should wait and make several pyelograms to determine whether this deformity is changing.

5. The diagnosis of malignant condition is usually correct, and when in doubt it is better to do a nephrectomy, as these three cases have been culled from a considerable series of proved malignant conditions.

205 West Second Street.

ABSTRACT OF DISCUSSION

DR. JOHN R. CAULK, St. Louis: The longer we deal with pyelographic and ureterographic interpretation, the more careful we become. We must not forget that we are examining a muscle tube, the function of which is to transmit urine, and that it is susceptible to changes from within and without. We should make repeated studies and not be in too much of a hurry in cases in which we are not absolutely sure of tumor. I much prefer to take time for differentiation, make repeated studies and be as sure as I can in a borderline case, rather than to explore the kidney. If there is a definite tumor mass, with hematuria and possibly pain and a bizarre pyelogram, we are sure the tumor should be removed, provided it is not associated with general conditions that contraindicate surgical intervention. Sometimes a tumor of the kidney may cause us considerable trouble in diagnosis. Our chief differential problem is between blood clot from some other cause and some other pathologic change, and blood clot in the renal pelvis from tumor. To make a pyelogram during active bleeding may lead one into serious mistakes; if there is a cessation of hemorrhage for a short period we may get a different outline than during hemorrhage. The pelvic growths and small tumors of the kidney which invade the calix somewhere but are not sufficiently large to be palpable cause most concern. My only word of warning is care, patience and study. I am convinced that we should make repeated pyelograms under different pressures, watch the emptying time, and try if at all possible to get a pyelogram of the kidney between bleeding periods if we are fortunate enough to encounter such periods.

DR. M. B. WESSON, San Francisco: This paper illustrates well the fact that a diagnosis cannot always be made from a pyelogram alone, "things not always being what they seem." The boundary between the outlines of normal and pathologic kidney pelves still causes confusion according to Joseph, who recently stated that some pyelographers of international repu-

tation were not as familiar with the normal as they should be. Dr. Nicholson did not make his diagnosis from the pyelograms alone but from the symptoms, aided by the pictures, and he proved it in the pathologic laboratory. The roentgenologist does not see the patient as a whole; hence he is usually incapable of making the diagnosis. Because of the tendency to depend on his opinions, many roentgenologists feel that they are wholly responsible for diagnoses and that as soon as their reports are rendered the films are no longer of value and importance and can be destroyed.

CHRONIC OBSTRUCTION OF THE SMALL BOWEL

THE RESULT OF TWO ENTERO-ENTEROSTOMIES AND APPARENTLY THE CAUSE OF PERNICIOUS ANEMIA *

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L. G. ZERFAS, M.D.
AND
H. M. TRUSLER, M.D.
INDIANAPOLIS

Severe anemias of primary type have occurred in patients with gastro-intestinal disorders often enough to arouse speculation as to the relationship between the two conditions. Cases have been reported which

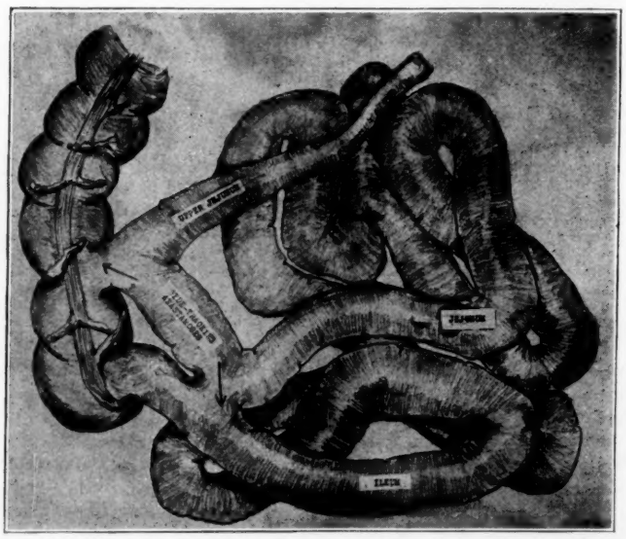

Fig. 1.—Diagrammatic representation of appearance of intestine after two entero-enterostomies, showing side-tracking anastomoses that resulted in the formation of a blind loop of intestine.

purport to show that the deranged gastro-intestinal tract is a cause of the disease, although no generally accepted cause for primary anemia has been agreed on.

The case here reported strongly supports the belief that primary anemia may be caused by certain types of prolonged disturbance of the small bowel.

REPORT OF CASE

History.—O. K., a man, aged 28 years, a farmer, was admitted to the Robert W. Long Hospital, May 20, 1927, with an extreme anemia of several months' duration. In 1919 he had been operated on for acute gangrenous appendicitis and subsequent to this operation he developed an acute obstruction of the small bowel which was relieved by operation. A third operation was done in 1921, and a fourth in 1923, both for intestinal obstruction. Fecal fistulas resulted and persisted after all but the last operation. As far as could be ascertained, a lateral anastomosis had been performed between distended and collapsed loops at two of these operations.

Since 1923 there had been marked disturbance of nutrition with loss of weight and periodic cramping attacks, usually followed by diarrhea. Vomiting sometimes accompanied these attacks. In December, 1926, weakness became a prominent symptom. In March, 1927, the anemia became a prominent symptom and progressed rapidly.

Examination.—On admission eight years after the acute appendicitis, the patient was markedly emaciated and anemic and extremely weak and dyspneic. There was pronounced fulness of the abdomen, with an easily noticeable ladder pattern apparently caused by loops of distended small bowel. There was active peristalsis of these loops, which was apparent through the thinned and scarred abdominal wall.

It was felt that a considerable part of the small bowel was involved in a blind loop resulting from one or both of the side-tracking operations and that this blind loop, the site of a chronic obstruction, was filled with stagnant bowel contents. Roentgen examination after a barium meal did not show either site of anastomosis but confirmed the opinion that a blind loop was present. In addition, the following conditions were outstanding in the general examination:

1. Very pale mucous membranes with a slightly atrophic red tongue.
2. Numbness and tingling of both hands and feet, with reflexes present and normal.
3. Low blood pressure: 98 systolic and from 45 to 58 diastolic.
4. Icteric skin and sclerae.

Laboratory analysis of voided urine showed it to be clear, with a specific gravity of from 1.020 to 1.030, and negative for sugar, albumin, pus and casts.

The phenolsulphonphthalein test was 40 per cent for the first hour and 25 per cent for the second hour.

The erythrocyte count of 1,300,000 rose to 3,400,000 after transfusion. The leukocyte count of 2,500 rose to 7,500 after transfusions. Nucleated red cells were present in the proportion of from 4 to 8 per hundred leukocytes. Anisocytosis and poikilocytosis were both present in marked degree. The blood group was 11 by the Moss classification.

The Wassermann reaction was negative on four examinations.

Operation and Course.—Incision was made through the old scar. Numerous thinned out adhesions and two entero-enterostomies were found. The jejunum high up had been anastomosed to the ascending colon, and the jejunum about 10 inches below the first anastomosis was united to the terminal ileum about 15 inches above the cecum. The entire small bowel between the first anastomosis and the cecum was enormously distended and thickened and filled with liquid bowel contents (fig. 1). Both anastomoses were undone and the openings in the cecum and terminal ileum closed. A piece of upper jejunum with the two openings 10 inches apart was excised and an end-to-end anastomosis was done. The closure was complicated by the necessary hernial repair.

Microscopically the excised bowel showed marked hypertrophy of the muscle layers, some edema and hemorrhage, and extreme scarcity of lymphoid tissue.

The postoperative course was uncomplicated. The blood pressure was 118 systolic and 72 diastolic at the time of discharge, July 14, 1927, and the wound was clean and well healed. There was complete relief from the abdominal distress after the operation of June 24, 1927, and normal bowel movements, without diarrhea, became a daily habit.

On release, the patient was advised to take a liberal diet, with plenty of milk, fresh vegetables and fruits, and especially red meats and whole liver. He could not or would not tolerate sufficient liver and was urged to return to the hospital for reexamination, with particular reference to the blood.

Readmission.—The patient was readmitted, September 26, with a marked anemia, loss of weight, loss of appetite and the complaint of extreme fatigue on exertion. The erythrocyte count at this time was 2,020,000 per cubic millimeter, and the hemoglobin was 50 per cent.

Laboratory Examinations.—The stools were negative for ova, parasites and occult blood on several occasions.

* From the Departments of Medicine and General Surgery of the Indiana University School of Medicine.

Gastric analysis showed free hydrochloric acid in normal amounts, on three separate examinations.

Blood bilirubin was 3.2 mg. per hundred cubic centimeters of blood. An indirect reaction was obtained.

Neutral red gastric excretion showed the dye present in approximately normal amounts in each fifteen minute specimen of stomach contents during a period of three hours.

The red blood cells were typical of those commonly recognized during a relapse in primary anemia. The red blood cells decreased from 2.02 million per cubic millimeter to 1.6 million during a period of ten days in which the patient did not receive specific treatment.

Treatment.—October 4, the patient was given liver extract no. 343. Figure 2 shows the usual temporary increase in the reticulocytes, followed by a rapid increase in the red blood cell count and hemoglobin percentage. The clinical improvement was marked, and the patient gained about 10 pounds (4.5 Kg.).

An adequate amount of liver extract no. 343 was given for eight months and then it was discontinued for a period of three months. At the end of this time, the red blood cell count had decreased to 2.9 million per cubic millimeter, and the patient had a recurrence of diarrhea, with loss in weight, strength and appetite. When daily treatment with adequate amounts of liver extract no. 343 was resumed, the level of the red blood cells reached and maintained approximately a normal level within five months.

Fig. 2.—Effect of liver extract no. 343 on blood picture: unbroken line, red blood cells in millions per cubic millimeter; broken line, reticulocytes in percentage; blackened area, liver extract derived from 100 Gm. of liver.

The patient, since his discharge from the hospital following the last admission, has been able to operate a gasoline filling station and to manage a poultry farm.

COMMENT

1. The small bowel abnormality, found in this patient as the result of previous operative measures, is very rare in surgical experience. The entero-enterostomies were life-saving measures at the time they were performed, but the result argues strongly for a Witzel type of enterostomy when such an obstruction problem presents itself.

2. Almost all the absorptive area of the small bowel was out of function. It was filled with stagnant fluid contents, and it is fair to presume that absorption of toxic products took place. It is certain, at least, that normal absorption from the most essential absorptive area of the bowel was interfered with.

3. With the exception of free hydrochloric acid in the gastric contents, the laboratory and clinical observations were typical of primary pernicious anemia. The similarity was further borne out by the typical response of the blood and the clinical improvement, which were both dependent on the daily ingestion of adequate amounts of a potent fraction of liver.

610 Hume-Mansur.

PRACTICAL POINTS IN THE TREATMENT OF TRACHOMA *

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As this paper is concerned only with a few practical points in the treatment of trachoma, I shall not discuss the history, etiology, diagnosis, pathology, distribution or economics of the disease.

It is well known that many cases of acute trachoma respond readily to treatment and are cured within a short period of time. It is known, too, that many cases of simple follicul osis are called trachoma in Oklahoma, as well as elsewhere, as it is quite prevalent. But there are many cases of trachoma which have been neglected, especially among the Indians, until they have reached such an advanced stage that an ophthalmologist of even very meager experience could not mistake their true nature. I am referring to those severe cases which do not respond readily to treatment and which have been called incurable. Notwithstanding the fact that the committee appointed by this Association in 1920 to study trachoma in the South has said [1] that, "strictly speaking, trachoma cannot be cured though it may be arrested," I contend that practically all cases of trachoma can be cured.

Certainly no one thinks that he can entirely eradicate the sequelae of an old, long continued trachoma. Frequent ulcerations which extend through Bowman's membrane into the cornea proper leave scars which nothing can eradicate. A dry conjunctiva can never be entirely restored to its normal condition. But hypertrophied papillae and follicles can be replaced by scar tissue, and the conjunctiva left pale, smooth and free from redness, dilated vessels and discharge. Pannus will disappear when the pressure from a rough and heavy lid is relieved. Lacrimation, photophobia, pain and discomfort can be relieved. Blepharophimosis can be cured by canthoplasty. Thickened cartilages in the upper lid can be removed by tarsectomy or, if com-

* Read before the Section on Ophthalmology at the Eightieth Annual Session of the American Medical Association, July 10, 1929.

1. Report of Committee on Trachoma, Tr. Sect. Ophth., A. M. A., 1921, p. 326, paragraph 15.

plicated by entropion, may be corrected by a modified Hotz operation. If there are no corneal scars, the patient can be restored to comfort and useful vision by the proper line of treatment.

Eighteen years ago a colleague in one of our smaller cities, who had had a wide experience with trachoma among the Indians, and whose work had shown excellent results, referred a patient on whom he had operated two or three times with repeated recurrences of the trouble. There was much discharge and photophobia. The eyes were irritated and uncomfortable most of the time. The palpebral conjunctiva was thickened, red and velvety, with many smooth scars. A careful examination after instillation of cocaine and epinephrine failed to disclose any trachoma follicles in the fornices or on the lids. However, the semilunar fold and caruncle were studded with large follicles. I had often removed follicles from the semilunar fold in my operative treatment but had never noticed them in the caruncle. After injection of 1 per cent cocaine these follicles were punctured with a cataract knife, and expressed with Prince forceps. I can remember vividly the difficulty I encountered in getting the caruncle into the forceps, which led to the development of my technic

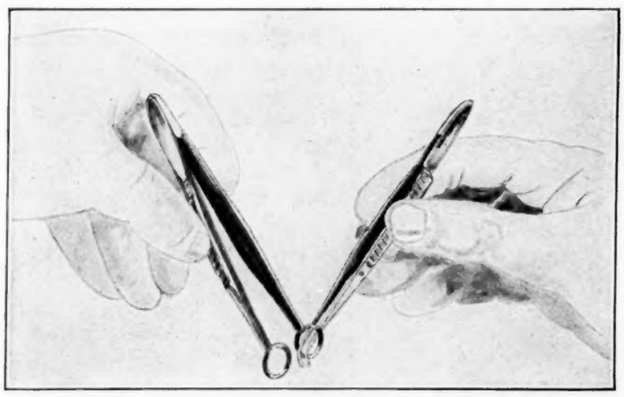

Fig. 1.—Method of inserting iris forceps through opening in one blade of Prince forceps.

for expressing the caruncle. This patient improved very rapidly, and the physician who had referred him told me years afterward that he had never had any further trouble. The infection of the caruncle and semilunar fold was evidently the reason for the failure of this case to respond to treatment. Trachomatous infection of the caruncle had never been called to my attention before. Quite a number of my own patients were having relapses, and this led to a careful examination of the caruncle in them. Almost without exception, trachoma follicles were found. As trachoma in Oklahoma at that time was being treated by all the physicians of the state, I saw many recurrent cases in which operation had been performed by other men, many of them excellent ophthalmologists. Infection of the caruncle was an almost constant feature in these cases.

In most of the cases in which there is an infected caruncle, the trachoma follicles stand out as papules just as they do in the fornices. In others, only a general swelling of the caruncle shows it to be infected. In many that show neither follicles nor swelling, much material similar to that expressed from the follicles of the lid may be expressed from the caruncle. This has led me to include expression of the caruncle in all my operations for trachoma.

A fairly careful search of the literature has failed to reveal any mention of the caruncle being infected in trachoma, or of its being a source of reinfection, except in my own discussion [2] of Fox and Ziegler's papers at the session in Atlantic City in 1925.[3]

Dr. Kalloch [4] called attention to reinfection near the caruncle when he said: "My experience with grattage in the U. S. Indian Service, however, has indicated that the principle difficulty in effecting a cure was the obstinate recurrence of chains of follicles springing from a small area in the retrotarsal fold near the caruncle." Why should this be the area that first becomes reinfected? In my opinion, it is because of its direct contact with the caruncle through the semilunar fold.

I make no attempt to explain from a histologic or pathologic standpoint the occurrence of trachomatous infection of the caruncle. Clinically, however, I am certain that I have expressed the same soft gelatinous material from the caruncle as is obtained from the follicles in the lids and fornices; and I have seen many cases go on to complete recovery after this treatment of the caruncle that had not been relieved by treatment of the lids and fornices only. Since I included expression of the caruncle in my operative treatment of trachoma, it has been my experience that 99 per cent of cases are curable.

The many drugs and surgical operations for trachoma are well known to all; so I shall not attempt a summary of the voluminous literature on the treatment. I have used, at some time during the past twenty-five years, all the drugs that have been advised for the treatment of trachoma except chaulmoogra oil. I have not used diathermy, x-rays, radium, any light treatment or the actual cautery. Experience has demonstrated to me that the basis for the treatment of trachoma should be surgical in all except the very acute cases. Proper surgical procedures will shorten the treatment of trachoma by many months, and in many cases years, as compared with treatment by drugs alone. Operative procedure should be followed by drug treatment and observation for at least two years before a patient is dismissed as cured.

I do not have the records to present the reliable statistics that I should have, as the great bulk of my work was done from ten to twenty-five years ago, when none of us were keeping as good records as we do at present. During the past ten years the government has taken over most of this treatment among the Indians in our state, and government surgeons are doing some excellent work in most of the clinics. Consequently I have not seen so many cases of trachoma during the past ten years.

There have been so many classifications of trachoma that I do not try to follow any of them but simply classify my cases as acute and chronic. Many times, in the acute cases, the differentiation between trachoma and folliculosis is difficult if not impossible. Such cases I treat as acute trachoma.

The treatment of the chronic cases is about the same in all stages. In all, follicles are present, and the first thing is to eradicate these. It matters not whether

2. McHenry, D. D., in discussion on Trachoma, J. A. M. A. **86**: 406 (Feb. 6) 1926.

3. Since writing this paper I have found the statement that "follicles are also found on the bulbar conjunctiva, the caruncle and semilunar folds," in de Schweinitz's "Diseases of the Eye," ed. 9, p. 236. It was not recorded in the index; so I missed it in my search.

4. Kalloch, D. C.: Treatment of Trachoma by Surgical Diathermy, J. A. M. A. **89**: 1511 (Oct. 29) 1927.

these follicles cover all the bulbar and much of the palpebral conjunctiva or whether many of them have been replaced by scar tissue. In the end, they must all be replaced by scar tissue. If there is much acute inflammation with discharge, which usually means a mixed infection, or corneal ulcers, a few days of suitable treatment to correct these conditions before operation is advisable. Usually treatment is commenced by a radical operation.

TREATMENT

Acute Cases.—In these cases, under good anesthesia, the follicles are rubbed off with the finger covered with gauze, saturated with either boric acid powder or copper sulphate in glycerin (2 to 5 per cent). This method is used in the cases in which the follicles are few, limited to the edge of the cartilage, the upper fornix and the lower fornix. Those cases in which the diagnosis is doubtful are also treated in this manner. This is followed by the application of copper sulphate (2 to 5 per cent) or silver nitrate (1 per cent) daily or two or three times a week. Then the patients use at home mercuric oxycyanide, in from 1:5,000 to 1:3,000 solution, two or three times daily.

Chronic Cases.—The great majority of the chronic cases show a decided hypertrophy of the orbicularis muscle and often a blepharophimosis due to the years of squinting. In these cases the other operative work is preceded by a canthoplasty, according to Ziegler's method,[5] care being taken to cut the canthal ligament.

My technic of operating has been taken from what I think are the best parts of many other men's methods. As a routine, a combination of grattage and expression is selected to suit each individual case. What is necessary in one case would be absolutely inexcusable in another, and vice versa. The thing that must not be overlooked is the infection of the caruncle.

Practically all the printed discussions of the surgical treatment of trachoma simply advise the use of grattage, expression, brossage and tarsectomy. They do not give a detailed description of the technic of any of these procedures except tarsectomy. For the benefit of those who have not had opportunity for observing the technic, I give a minute description of the method which has been successful in my hands.

OPERATIVE TECHNIC

The first operative field is the bulbar conjunctiva, semilunar fold and caruncle. If a local anesthetic is being used, one should first instil 4 per cent cocaine with 1:10,000 epinephrine, four times, at intervals of five minutes. If a general anesthetic is used, two instillations of 1:5,000 epinephrine, five minutes apart, should be given during the administration of the anesthetic.

The use of the epinephrine is very important, both for treatment and for diagnosis, as it shrinks the mucous membrane between the granules, so that they stand out and are much more easily seen.

If the local anesthetic is used, the next step is the injection of a 1 per cent procaine hydrochloride solution under the follicles in the bulbar conjunctiva, under the semilunar fold and under and into the substance of the caruncle.

Each individual trachoma follicle is now carefully punctured with a sharp Graefe knife. If no follicles are seen in the caruncle, several small punctures are made in it. Experience has shown that no permanent harm will result from puncturing and expressing it, even though it may not be infected. Often much gelatinous material may be expressed from a caruncle that does not appear to be infected. Then with small Prince forceps, the contents of the follicles are expressed. Those in the conjunctiva and most of the semilunar fold are very easy to express. There is a little knack in getting the caruncle and the semilunar fold adjoining it into the forceps, as I mentioned in commenting on the difficulty I had in my first case. I use iris forceps to pull the caruncle up between the blades of the Prince forceps, as illustrated. An assistant holds the lids well apart. The iris forceps are inserted through the opening in one blade of the Prince forceps (fig. 1), then down between the blades, the caruncle being grasped with the iris forceps and held up, so that the Prince forceps may be pushed down around it, and so express the follicles in it (fig. 2). It is very necessary to be careful to get them all. Each follicle in all of the bulbar conjunctiva should be treated in the same way. Of course if there are no follicles, the conjunctiva is not subjected to puncture and expression.

Fig. 2.—Expression of follicles, the caruncle being grasped with the iris forceps as in figure 1 and held up, so that the Prince forceps may be pushed down around it.

I then proceed to the lower lid, injecting procaine in the loose conjunctiva of the lower fornix, if a local anesthetic is being used, and physiologic solution of sodium chloride if a general anesthetic is employed. I inject the physiologic solution of sodium chloride simply to balloon the loose conjunctiva so that the follicles can be more easily seen. This brings them all up and simplifies the operation greatly. The conjunctiva is ballooned so much that it usually everts the lower lid. Then the trachoma bodies over the cartilage of the lower lid are carefully punctured at the point at which the conjunctiva is adherent to the cartilage and is not separated by the ballooning; that is, the marginal 2 or 3 mm. This is followed by brushing of the conjunctiva of the lower lid—a grattage—with a small, thin handled tooth brush on which the bristles have been trimmed to about ⅛ to 3/16 inch in length, and carefully trimmed all the same length, and which has been soaked in 1:1,000 mercuric chloride solution, and

5. Ziegler, S. L.: Surgery of Trachoma, J. A. M. A. **86**: 399 (Feb. 6) 1926.

dried. In the extreme ends of this marginal, adherent conjunctiva, where there is not room to get the brush into the angle of the lids, a sharp curet or the point of a knife should be used to remove the follicles. After brushing this part of the lower lid, one should puncture each trachoma follicle in the ballooned conjunctiva of the lower fornix, below the mucous membrane adherent to the cartilage. After this has been done, several deep punctures are made through the conjunctiva to allow an exit for the injected solution. Then expression is done all over this loose conjunctiva with Knapp roller forceps. In all expression work one should be exceedingly careful not to tear the conjunctiva. The roller forceps will not go into the angles at either end of the lower or the upper fornix. There, again, the small Prince forceps should be used to express the follicles, and it may be found necessary to use the iris forceps to grasp some of them and pull them into the Prince forceps in the extreme angles, as in the illustrated method of expressing them from the caruncle.

Then the upper lid is everted and injected again with either the procaine or the saline solution under the loose conjunctiva above the upper edge of the cartilage. This brings the follicles of the upper fornix all out, making them much more accessible than by everting the lid the second time. Then all follicles should be carefully punctured, beginning next to the junction with the bulbar conjunctiva as this now is the lowest point, so that the blood will be below instead of above, where it would obstruct the field. The puncturing should be stopped at the lower edge of the cartilage. All the follicles should be punctured at the point at which the conjunctiva is adherent to the cartilage of the lower lid, as it is not solid enough to make a good foundation to rub with the brush. The upper lid, however, is more stiff and firm, and it is not necessary to puncture these follicles where the conjunctiva is adherent to the cartilage. However, it can be done if one wishes. Then the underside of the cartilage is brushed very carefully. One must use pressure enough to tear out the follicles, often leaving little holes in their places, and to injure the healthy mucous membrane as little as possible. The exact amount of pressure necessary must be learned by experience. One should start with little, and if that does not prove enough, more may be used to get the follicles.

Then from three to six deep punctures are made in this loose conjunctiva in the fornix above the cartilage, again to allow an exit for the injected solution. This is expressed with the Knapp roller forceps. Again great care should be taken to get the trachoma follicles in the angles. Often it will be found necessary to pull them into the small Prince forceps with the iris forceps as is done in dealing with the caruncle.

One next goes over all the conjunctiva very carefully with the small Prince forceps to find any unexpressed, punctured follicles or any not properly punctured, and express them. It is a laborious, painstaking job and takes time, patience and eyesight, but a patient's future vision and comfort are at stake and I think it worth while. After ten or fifteen minutes, mercuric chloride, 1 : 500, is rubbed very carefully and thoroughly into the lids, with cotton on a wooden applicator, the caruncle and bulbar conjunctiva being included. Then this is irrigated off with either sterile water or boric solution. One should endeavor to avoid the cornea. I have occasionally dropped this strong mercuric chloride solution on the cornea, but when it was immediately irrigated off have never seen any bad results from it. However, it is best to avoid this accident. In order that all bleeding may be stopped, one should wait about ten minutes after expression of an eye with many follicles before using the mercuric chloride rub, but should not wait too long with a local anesthetic, as the anesthesia may wear off. The conjunctival sac is then filled with 2 per cent iodoform ointment, and the eyes are treated with cold applications for the next few hours.

I use expression in the loose conjunctiva of the fornices as I believe it leaves less scar tissue than grattage. I used grattage without expression years ago and have watched the results of both.

POSTOPERATIVE CARE

The day after operation the lids are swollen, often ecchymosed and very sore. Little is done with them except to pull the lids well open and see that the patients turn their eyes widely in all directions. A 10 per cent mild silver protein solution is prescribed to be instilled three times daily with 2 per cent iodoform ointment to be used at bed time. The second day one should either evert the lids or sweep a small glass rod well into the fornices, to separate any possible adhesions between bulbar and palpebral conjunctiva. This is very important and should be repeated every second day or a troublesome symblepharon may result. This is followed by a 25 per cent mild silver protein solution and irrigation. By the fourth day it is necessary to see the patient only every other day. In about ten days or two weeks the patient is allowed to go home, if from out of town, for three or four weeks to allow healing of all the minute wounds that have been made and to allow time for the inflammation to subside, the mild silver protein solution and iodoform ointment to be continued at home. After this period of from four to six weeks, the patients are given a solution of: copper sulphate, 40 grains (2.6 Gm.); guaiacol, 10 grains (0.65 Gm.), and glycerin sufficient to make 1 ounce (30 cc.). From this they take 1 drop, add it to 20 drops of water and drop the dilution into each eye daily, making it fresh each day. Gradually the strength is increased until they get 1 drop of this to 5 or even 3 drops of water, which is a 1.5 to 2 per cent solution. If there is much secretion, 1 per cent silver nitrate is used at the office, followed by irrigation. I never prescribe silver nitrate to be used at home. If the lids show some roughness or some general velvety inflammation, I scrub them with a cotton wound applicator wet with from one-fourth to full strength of the copper solution, every few days.

POSTOPERATIVE RESULTS

In from four to eight weeks the lids are usually found entirely smooth, and the mucous membrane is thinned down to almost normal. Many of these patients would go on to complete cure without any further treatment. However, all of them are given the copper sulphate, guaiacol and glycerin solution as a routine at frequent intervals for at least a year, as an added safeguard. A few follicles may develop at any time from six to eight weeks afterward up to two years; so these patients are kept under observation, and asked to report every three to eight weeks. When follicles appear, the conjunctiva is injected with a little procaine solution, and the follicles are squeezed out with Prince forceps or curetted with a small sharp curet or the point of a knife. This is followed by a thorough scrubbing with cotton on a wooden applicator wet with 1 : 500 mercuric chloride.

With this line of treatment the patients do not need to be detained from their work for more than from ten days to two weeks at the time of the operation and the occasional day that it takes for the subsequent visits to the office. The patients are saved months of time by this surgical procedure as compared with treatment by drugs alone. I certainly do not claim that my particular form of operation or any particular line of treatment is all important. But the thoroughness of the original operation and the faithful carrying out of the subsequent treatments are what count so much for the future welfare of the patient. I do assert that the caruncle should be included in all operative procedures to insure success.

It is surprising how supple, moist and lightly scarred the lids are after such extensive, mutilating surgery. Again let me repeat that I am exceedingly careful in the expression not to tear the mucous membrane.

TARSECTOMY

The subject of tarsectomy is one concerning which there has been much discussion. Tarsectomy is a valuable operation: (1) in the old cicatricial cases in which most of the trachoma follicles have been replaced by scar tissue; (2) in the cured cases in which the cartilages are much thickened and distorted and the cornea has been irritated by pannus and frequent ulcerations when there is no entropion. But if there are any follicles left they should be thoroughly removed at the same time. Tarsectomy has no place in any other type of case. It has been practiced in my state in the subacute and even acute cases with the rest of the trachoma either untreated or poorly treated, leaving the patient suffering with trachoma and often leaving him with an entropion in addition. When the cartilage is completely gone from the upper lid except for a small 2 or 3 mm. strip on the lower edge, and the lashes turn in against the eyeball, I must confess that I have not been able to find any operation to correct the entropion. The only thing I have been able to do to relieve the patient has been to dissect out the roots of the lashes. I want emphatically to condemn tarsectomy for acute or subacute trachoma.

These views are shared by many others. Dr. Francis I. Proctor [6] says:

> Recently tarsectomy was heralded as a cure and was performed upon hundreds of children. Many of these were examined a year or more after the operation and most of them still had well marked trachoma. There was deformity of the lids in many instances and it was difficult to evert the lids for the after-treatment which was required in nearly all of these cases.

Most of the men in Europe and in this country who have had the widest experience with trachoma are opposed to tarsectomy as a routine procedure, especially among children, who can generally be cured by milder methods and without the deformity so often caused by tarsectomy. With one or two exceptions, the operation has been condemned by the ophthalmologists of Oklahoma, who have had much experience with trachoma.

When there is entropion, even though the lid is distorted I do not do a tarsectomy. Instead, the cartilage is exposed as in a Hotz operation and laboriously sliced down with a sharp knife before the V shaped incision is made, the operation being finished with a modified Hotz procedure. Though much more difficult to do, this has proved so satisfactory that I rarely do a tarsectomy, even when there is no entropion.

Many cases of trachoma develop under poor hygienic surroundings. Dr. Stucky [7] has thoroughly studied this phase of the problem and has emphasized the importance of corrective treatment. He has found that the vitamin which is especially found in fats has been lacking in the great percentage of these cases, and the addition of butter fat or, in its absence, cod liver oil, has helped greatly in his treatment, as has also the abundant use of fresh vegetables and fruit. Certainly that is one thing always to be taken into consideration and corrected if found. I have no clinic; so my patients have all been private patients accustomed to good food and good hygienic surroundings. The Indians as a rule eat much meat and little fruit and vegetables; so their diet must be watched, and often radically changed.

PANNUS

Pannus, per se, usually requires but little treatment. When the lid is rendered smooth and the pressure relieved by a canthoplasty or some lid thinning operation, the pannus usually clears up. I have obtained little benefit from trying to destroy the vessels in any manner.

In those cases in which the pannus seems to extend well over the cornea in a thickened gelatinous mass, which often resembles trachoma follicles, I have occasionally scraped this mass from the cornea with a knife at the time of operating on the lids, and, I think, hastened the clearing of the cornea many weeks by so doing. Certainly one must be careful and not get into Bowman's membrane.

Corneas that were so scarred and covered with this gelatinous mass that it seemed as though there would not be a chance for any useful vision, I have seen clear and thin down with very little scar, with a resulting vision of 20/30.

CONCLUSIONS

1. Trachoma is curable in 99 per cent of cases.

2. It is not often, if ever, entirely cured in the chronic stage by the use of drugs alone. I grant that this failure is partly due to the fact that it is impossible to keep the patient coming and submitting to such painful treatment for a sufficient length of time.

3. Any surgical procedure that will entirely eradicate the trachoma follicles and their contents with minimum destruction of normal mucous membrane is adequate.

4. In the great majority of well advanced cases of trachoma the caruncle is involved and must be included in surgical procedures if successful results are to be obtained.

5. Most chronic cases show hypertrophy of the orbicularis muscle with blepharophimosis, and a radical canthoplasty should precede other operative procedures.

6. Tarsectomy has no place in the treatment of active trachoma but is a valuable procedure in cured or nearly cured cases in which the lids are thickened and distorted.

7. Surgical procedures alone will result in cure in only a small percentage of cases of trachoma unless follow-up examinations are made for from one to two years, any follicles that may appear during that time being watched for and destroyed.

604 Medical Arts Building.

6. Proctor, F. I.: Noguchi's Discovery of the Trachoma Bacillus, Am. J. Surg. 5: 184 (Aug.) 1928.

7. Stucky, J. A.: Trachoma: Suggestions as to Diagnosis, Etiology and Treatment, South. M. J. 19: 140 (Feb.) 1926.

ABSTRACT OF DISCUSSION

Dr. Albert E. Bulson, Fort Wayne, Ind.: In a general way Dr. McHenry uses the treatment that I have employed for more than thirty-five years. It is impossible to eradicate entirely all the sequelae of long continued trachoma, but what we should attempt to do is to prevent the disastrous after-results, and that can be accomplished by the treatment he recommends. I am in entire accord with the opinion expressed that the disease affects the caruncle. I consider trachoma a surgical disease, no matter in what stage, though the character of surgical intervention depends on the conditions presented. In the acute stages I employ ice compresses in connection with applications of a dilute solution of copper sulplate in glycerin. I then give from one-fourth to one-sixth grain (16 to 11 mg.) of morphine hypodermically, and twenty or thirty minutes later proceed with the operative treatment after using epinephrine and local and subcutaneous anesthesia a good deal in the manner advocated by Dr. McHenry. Following canthoplasty in every case to relieve pressure, but more particularly to permit exposure of the eyeball during the stage of edema that follows the operative treatment, the trachomatous follicles and the caruncles are incised, expressed or curetted as seems indicated by their appearance. At the conclusion of the operation the entire conjunctiva is rubbed thoroughly with pure copper sulphate. Subsequently the pain is severe, and occasionally requires an additional dose of morphine for relief. The patient is placed in bed and ice cold compresses are applied over the lids continuously for twenty-four hours and in divided periods thereafter depending on the condition presented. There usually is very marked swelling of the lids, so much so that the patient is unable to open the eyes for from two to four days. During this period treatment is by saline solution irrigations, followed by mercuric chloride-atropine salve. At the end of a week or ten days the patient is given a saturated solution of copper sulphate in glycerin for home use once a day, to be diluted if found too severe, and is advised to continue the ice cold compresses for an hour following each application of the copper solution. Occasionally it later becomes necessary to use expression on one or two areas that have escaped the surgical treatment, but as a rule no further operative procedures are required, except a modified Hotz operation for the correction of an entropion if such exists.

I consider copper sulphate almost a specific as an adjuvant in the treatment of trachoma. While I use the pure stick frequently, in most cases I use the saturated solution of copper in glycerin and employ it undiluted for office use, and diluted or undiluted for home use by the patient, depending on the amount of punishment tolerated. In my experience the silver salts have not proved beneficial but harmful in these cases.

Dr. James M. Patton, Omaha: I want to emphasize, if it is necessary, what Dr. McHenry and Dr. Bulson have said about the importance of pushing the treatment of trachoma. In looking over a considerable number of case records of the applicants for a certificate from the American Board, I found that a great many have a very hazy idea as to what can be done for trachoma. We know that a majority of the men practicing ophthalmology know how to treat trachoma, but there are some who do not, so papers such as Dr. McHenry has presented have a real value.

One point that should be emphasized is care in manipulation of the conjunctiva in the acute stage of this condition. Dr. McHenry has brought that out and it is of great importance. I have seen cases in which, if treatment with the copper was started early and was sufficiently vigorous, it was possible to avoid operating on the conjunctiva. Of course, if it is done with extreme care, as has been stated by both speakers, it undoubtedly would be beneficial, but in the early stages sometimes it is difficult to differentiate the individual follicles, and so if operation can be avoided I think it is perhaps worth trying.

Another point I wish to mention is the use of forceps as advocated by Dr. McHenry. The pear-shaped forceps of Gifford are of distinct advantage in operations on the caruncle and the angles of the fornex.

It has seemed to me that the copper sulphate crystal has a definite advantage over the solution. It is difficult for patients to see their physician daily over the long period of time that they will have to use this treatment. A good many years ago Harold Gifford began the method of instructing some member of the patient's family, preferably the wife or the husband or an older child in the family, to evert the lids and apply the copper sulphate crystal directly to the conjunctiva. If the patient is supplied with a mild local anesthetic, e. g., a 2 per cent solution of butyn, so that a drop or two can be put in the conjunctival sac three minutes before the crystal is applied, the treatment can be carried on at home. The copper must be thoroughly applied so that it gets well into the retrotarsal folds and the corners if the disease is to be eradicated. Of course these patients must see the family physician at frequent intervals and should visit the ophthalmologist from time to time for inspection.

Dr. D. D. McHenry, Oklahoma City: I cannot quite agree with the physicians who use the strong solutions or pure crystal of copper. There has not been a piece of pure copper pencil in my office for the last ten years. I do not get the reaction with the 1:500 mercuric chloride solution following the operation that Dr. Bulson describes. His method may be the best, but by doing a very thorough operation and rubbing the mercuric chloride in I do not get the reaction he mentions, and usually I do not find it necessary to use a very strong solution of copper later.

I watch these patients for a couple of years afterward, and when the first evidence of a trachoma follicle appears I inject a little procaine under the follicles and express them with the Prince forceps, and have the patient use an 8 per cent copper sulphate solution at home. The great difficulty is to get these patients to use this treatment at home, or to return to the office for this treatment, if one hurts them. Two things these patients object to: being hurt, and paying more money. As I stated in my conclusions, these cases can probably be cured by drugs if one has time enough. They will cure themselves if they are given time enough, but the eye is usually ruined before that happens. I say to these patients that I will operate on them and treat them for so much money paid in advance, but I want them to come to see me at least every thirty days for the first six months, and every two or three months for a couple of years, or until I say they are entirely cured. If it does not cost them any more they will come, but many people will not come if there is another fee attached. That is a point that I think is worth remembering in handling these cases.

I was prompted to write on this subject by the report of the committee from this section on trachoma, to the effect that it was not curable. That is not my experience, and I do not believe it will be the experience of any of us if we will painstakingly operate on these patients first, and watch them for a few months afterward.

Tissue Grafting.—There is a remarkable analogy between grafting processes in the vegetable kingdom and grafting in surgery. The vegetable kingdom shows less differentiation of tissue than the animal kingdom, so that the range of compatibility is wider when plant tissue is grafted than when that of animals, and especially of man, is grafted. Plant grafts will take if the host and scion belong to related varieties. This is not the case in animals, and especially in man, where autogenous grafts are almost necessary. In man, the less highly differentiated tissues graft better. Fascia, tendon and bone present a much simpler problem than nerve tissue, for example, which cannot be grafted, in the strict sense, at all. In both animals and plants it is desirable to have corresponding layers, if possible, placed in contact and held there by accuracy of fit and by immobilizing measures. In the plant the double-bladed grafting knife insures accuracy of fit of scion, bud, bark and alburnum. In the case of the human osseous system, the same precision can be attained only with motor-driven tools, since the material to be cut is so much harder. Immobilization is brought about in the plant by accuracy of fit and by the paraffin dressing which, by protecting the healing zone against saprophytes and fungi, takes the place of aseptic technic in the grafting of bone and, by allowing almost the entire spectrum to penetrate, brings to the chlorophyll of the healing tissues of the plant all the advantages that we seek by heliotherapy.—Albee, F. H.: Some Scientific Aspects of Orthopedic Surgery, *J. Bone & Joint Surg.*, October, 1929.

Special Articles

NARCOTIC ADDICTION

REPORT OF THE MAYOR'S COMMITTEE TO HON. RICHARD C. PATTERSON, JR., COMMISSIONER OF CORRECTION

ALEXANDER LAMBERT, M.D., CHAIRMAN
NEW YORK

On assuming charge of the Department of Correction of New York City in 1928, Commissioner Richard C. Patterson, Jr., in his survey of the department, found that the management of drug addicts was one of the problems confronting him. Approximately 1,500 drug addicts come under the supervision of the department annually, and there had been no systematic or uniform method of handling these cases in the departmental divisions in which they were distributed. Accordingly, and with the approval of Mayor Walker, a committee, known as the Mayor's Committee on Drug Addiction, was appointed in November, 1927, to study the subject of drug addiction, and to make such recommendations as the findings warranted.

The personnel of the committee was as follows: Dr. Alexander Lambert, chairman, and Drs. Stanley R. Benedict, Menas S. Gregory, William R. Williams, Thomas A. McGoldrick, Israel Strauss and Linsly R. Williams. Dr. Matthias Nicoll, Jr., state commissioner of health, and Dr. Louis I. Harris, city commissioner of health, served as advisory members. Originally the committee was organized with Dr. William R. Williams as chairman, but in September, 1928, Dr. Williams was compelled to resign from the committee on account of ill health; Dr. Lambert succeeded Dr. Williams as chairman, and Dr. George B. Wallace was added to the committee. On Dr. Harris' withdrawal from the health department, his successor, Dr. Shirley Wynne, became an advisory member.

In outlining its work, the committee considered it a matter of primary importance to establish a satisfactory method of treatment for the withdrawal period of drug addiction. The commitments of those coming under the charge of the department are in general for a period of three months, and the immediate problem is to stop the taking of the drug of addiction as promptly as can safely be done. In addition to this phase of the subject, however, it was planned to obtain useful information concerning the physical and mental status of the drug addict, and finally to investigate the practicability of carrying out a rehabilitation treatment toward the end of making a useful individual out of the addict.

For the study of the treatment of withdrawal symptoms, one of the wards of the psychopathic division of Bellevue Hospital, with a capacity of seventeen beds, was turned over to the committee. A full-time medical staff, consisting of Dr. Charles Schultz, assistant alienist at Bellevue Hospital, in charge, with Dr. Sidney Halperin, and later Dr. Bernard Raginsky, as assistants, was appointed, together with an adequate number of carefully selected nurses and keepers. Each patient was kept under continued personal observation. The patients studied, all men, were addicts committed voluntarily by a city magistrate, usually Chief Magistrate McAdoo. The hospital study began May 28, 1928, and continued until May 15, 1929. During this period, a total of 318 addicts was studied. The committee held weekly conferences and rounds were made daily by one or more of its members, including the chairman. In this way it kept in constant touch with the work.

A complete case record was made for each patient admitted. This included a full history and physical examination, a psychologic grading, routine laboratory tests, and, in certain cases, extensive blood analyses. The symptoms occurring during the stay in the hospital and the results of treatment were recorded in detail.

As a result of the carefully planned and executed system employed, it is believed that the data obtained are as reliable as may be hoped for in a study of this sort. A full account of the work done in the hospital is given in a report by Dr. Schultz, with supplementary reports by Dr. Benedict, Dr. Neuwirth, and Drs. Gregory and Strauss. What immediately follows is a summary of the facts brought out.

RESULTS OF HOSPITAL STUDIES

As has been stated, the number of patients treated was 318. All were men, and eight of these were negroes. The youngest was 19 years old, the oldest 75. Approximately one-half were between 30 and 39; more than one-fourth were between 20 and 29. Eighty-three per cent admitted criminal records, about half of these having been arrested because of the possession of narcotics. The remainder had records of conviction on such charges as larceny, burglary, assault, carrying concealed weapons and homicide. Of the group, 230 had received a public school and sixty-four a high school education, while eighteen had attended college. Six had not had any schooling.

At the time of admission heroin was the drug most commonly used, being employed by 263. Morphine was taken by thirty-one. It is interesting to note that cocaine, taken with either heroin or morphine, was recorded in only four instances. The period of addiction varied from one to fifty years with about one half of the patients giving a history of addiction for more than ten years. Only thirty-nine of the addicts stated that they had not taken any treatment to stop the habit. The remainder had taken the reduction or abrupt withdrawal treatment, or one of the several so-called specific treatments on one or more occasions. More than half had undergone one or another form of treatment on four or more occasions. In more than a fourth of those having treatment, the longest period of abstinence from the narcotic was less than one year.

The patients on admission varied considerably in regard to their general physical condition. About half of them were recorded as well developed, fairly well nourished and without evidence of organic disease. Of the remainder, all were poorly nourished, and a third of these showed definite organic deterioration or disease. Practically all showed a marked neglect in personal hygiene, in regard to clothing, general body cleanliness and care of the teeth.

In the detailed physical examination, it was found that eighteen of the group had active or quiescent pulmonary tuberculosis. Out of 285 examined, fifteen had a positive Wassermann reaction. In general, the circulatory organs showed no abnormalities, although the blood pressure was usually at the lower limits of the normal figures. The blood count, blood nitrogen and blood sugar were within the normal range, and examination of the urine was negative except in a few instances. Examination of other organs was negative, except for the skin scars and abscesses which resulted from hypodermic injections.

Since it has been asserted that narcotics materially alter the condition of the vitally important cell lipoids, and one method of treatment has its theoretical basis on this assumption, a thorough study of this phase of the subject was carried out under the direction of Dr. Stanley R. Benedict. The conclusions reached are as follows: 1. Figures obtained for plasma total lipins, total fatty acids, cholesterol, phospholipins and phosphorus in drug addicts during addiction have been found to be within the normal range. The lactic acid and total solid values in whole blood have also been normal. 2. No alteration was observed in the values of total lipin, total fatty acids, cholesterol, phospholipins and lactic acid obtained from addicts during addiction and following short periods of treatment.

A study of calcium and magnesium blood content was made by Dr. I. Neuwirth. During the period of addiction and of withdrawal, the concentration of these substances in the blood was within normal limits.

Since the results in the treatment of drug addiction are intimately related to the personality and mental make up of the addict, a study of the mental status of all patients admitted was carried out. Without a knowledge of the status of the patients prior to addiction, it is of course impossible to state with certainty what part of the existing states was due to the continued taking of the narcotic and what part was present before addiction began.

Under Bleuler's classification of fundamental reaction types, 41 per cent were classed as schizoid types, 30 per cent as syntonoid types and the remainder as mixed types. The majority of the patients were found to be of average intelligence, and less than 5 per cent appeared to be mentally inferior, of the high grade moron type.

In the grouping according to personality types, about 13 per cent were considered of normal personality, 30 per cent were borderline cases and more than 50 per cent were considered constitutionally psychopathic. In the latter group were included emotional instability, 20 per cent; criminalism, 13 per cent, and paranoid personality, 9 per cent. A full discussion of this phase of the subject is given in a report by Drs. Gregory and Strauss.

From these facts it is apparent that the 318 addicts studied belong to the class known as the "under world." They had all been taking addiction drugs over a considerable length of time, and very few would be considered useful members of society. They had all made efforts to break the habit by means of so-called cures—many times in some instances, with only temporary periods of abstinence as a result. Physically they showed no evidence of any appreciable harm done by the drug of addiction, and rehabilitation from the physical standpoint would present no great difficulty. On the mental side, however, the matter is different. More than half of them were classed as psychopathic. Lacking emotional values and control, they had no true conception of their difficulties, and were actually antagonistic toward efforts to rid them of the habit. These factors will be discussed more fully later on under the subject of rehabilitation.

COMPARATIVE STUDY OF TREATMENTS

In order to evaluate any particular course of treatment of the withdrawal symptoms in drug addiction, it is necessary to have some fairly clear cut standard for comparison. The most obvious standard in this instance would be that obtained by the study of the type and intensity of the symptoms which occur when the narcotic is abruptly withdrawn from the addict. It must be pointed out, however, that no two addicts behave precisely the same on abrupt withdrawal. The mental make-up of the patient, the length of the addiction period, the local environment, and other factors influence very greatly the range and intensity of the symptoms. It was necessary, therefore, to pick out and study those symptoms which commonly occur, that is, are present in practically all instances, and which allow of grading as to intensity. Secondly, it was essential to have an adequate number of patients for the establishment of the desired standard or control.

The number of patients used in obtaining the standard was 100, and the symptoms taken as giving the best index of the actual condition were (1) gastro-intestinal symptoms, consisting of nausea, vomiting, abdominal cramps and diarrhea; (2) muscular symptoms, consisting of aches and twitchings; (3) restlessness, both physical and mental, and (4) prostration, subjective and objective. Each of these symptom-groups was recorded as absent, moderate, marked or excessive. The course of the symptoms on withdrawal is as follows: In a few hours psychic symptoms appear, as restlessness, uneasiness, anxiety and irritability; within from twelve to eighteen hours the physical symptoms begin—gastro-intestinal, muscular and a legion of others—reaching a maximal intensity at the end of twenty-four hours. This peak is maintained for twenty-four hours, after which the symptoms subside, so that at the end of seventy-two hours, or at the most ninety-six hours, they have practically disappeared.

All symptoms of abrupt withdrawal were noted, but the four groups mentioned formed the chief basis for comparison of the efficacy of any treatment investigated. It may be pointed out that in obtaining this standard, alternate patients were used; they were kept in ignorance of the procedure adopted, and placebos were given as a routine. Following the withdrawal period comes a stage of recovery or convalescence, careful records of which were also kept and used as a basis for comparison.

The first study of special forms of treatment was on Narcosan. The chemical nature of this mixture is described in the report of Dr. Benedict. Sixty-eight patients were given this treatment, which was carried out at first according to the direction of Drs. Lambert and Tilney and later with some modifications of their method. The results of this study, which was briefly reported in THE JOURNAL, January 12, are as follows: 1. Narcosan is not a specific for drug addiction. 2. It did not alleviate any of the withdrawal symptoms, but on the contrary all, especially the gastro-intestinal group, were more severe than those in the control or untreated group. The combination of abrupt withdrawal and severe gastro-intestinal symptoms incidental to Narcosan treatment involves danger to life in addicts who are aged, ill nourished and suffering from pronounced organic diseases. 3. There is no obliteration of the craving for narcotics following Narcosan.

Since many of the specific treatments of drug addiction have as their basis some form of belladonna, a study was made of the effects of the active principles of this plant, namely, atropine and scopolamine.

Atropine was given to twenty-five patients through a forty-eight to seventy-two hour withdrawal period. It was given as the sulphate by hypodermic injection, in the following dosage: a first injection of $\frac{1}{100}$ grain (0.6 mg.) followed by three injections of $\frac{1}{200}$ grain

(0.3 mg.) at two hour intervals, after which 1/200 grain was injected every four hours. This dosage was sufficient to cause dryness of the mouth and difficulty in swallowing. Compared with the standard, the atropine was effective only in lessening to some degree the diarrhea. On the other hand, the restlessness was more marked, amounting in some cases to delirium, and the prostration somewhat longer in duration.

Scopolamine was also given to twenty-five patients, a sample of scopolamine hydrobromide obtained from Merck & Co. being used. It was given by injection in doses of 1/400 grain every four hours for four doses, and thereafter every six hours until withdrawal symptoms were over or delirium appeared. The results from scopolamine were similar to those from atropine; a slight lessening in the diarrhea but no amelioration of the other symptoms. Restlessness and prostration were more marked, and fifteen of the twenty-five patients showed symptoms of delirium.

Neither atropine nor scopolamine can be considered as specific, therefore, in regard to amelioration of symptoms; nor do they stop the craving for narcotics after the withdrawal stage.

A considerable number of substances which are depressant to the central nervous system, and might be considered as substitutes for addiction narcotics, were studied. Among these were chloral hydrate, phenobarbital, allyl isopropylbarbituric acid and a proprietary mixture of it with amidopyrine, sulphonethylmethane, paraldehyde, a proprietary paraldehyde preparation, bromides, acetylsalicylic acid and amidopyrine. When taken by stomach they were frequently vomited, and seemed to add to the gastric irritation. In moderate dosage they were without appreciable effect, while in large dosage there was frequently seen an ugly and unreasonable mental state, often associated with insomnia. They fail as substitutes because they do not have the inherent properties of action which characterize the opium group.

A special study was made of the effects of two other substances, magnesium and iso-amylethyl barbiturate. These drugs are strong depressants of the nervous system, in fact, they may be used as general anesthetics, and it was hoped that they might be given in dosage sufficient to produce a moderate narcosis during the entire withdrawal period.

Magnesium sulphate was given to forty-eight patients. In the beginning the dose was 2 cc. of a 50 per cent solution, injected intramuscularly at frequent intervals. There was no evidence of relief from these injections, and the patients complained of the sensation of burning and pain in the injected areas. Later on, a 50 per cent solution to which procaine had been added still being used, the amount injected was increased, in eight patients reaching a dosage of 0.25 Gm. of magnesium sulphate per kilogram of body weight. This dose raises the serum magnesium content to 5 or 6 mg. per hundred cubic centimeters of blood, at which level it may remain for from four to five hours. This level may be maintained by subsequent injections of from 5 to 10 cc. if given every four hours. It was found that when the blood concentration was 5 mg. or more of magnesium per hundred cubic centimeters, relaxation and absence of restlessness occurred. When the concentration was below this figure, the symptoms returned in full intensity. When magnesium was given by mouth as the chloride, no relief was discernible. It would appear that intramuscular injections of magnesium sulphate in dosage sufficient to maintain a serum level of 5 mg. or more per hundred cubic centimeters materially ameliorate the withdrawal symptoms. However, the local disturbance at the point of injection was such as to arouse great objection on the part of the patients and the treatment was abandoned as being impracticable.

Iso-amylethyl barbiturate was given to twelve patients as a sodium salt supplied by the Eli Lilly Company. It was injected in one patient intravenously and in another by intramuscular injection, and was given orally to the remaining ten patients, acting similarly in all instances. The initial dose ranged from 5 to 22½ grains (0.32 to 1.45 Gm.), 5 grains being the minimum effective dose, and 22½ grains being considered the maximum safe dose. The largest quantity given any one patient during the withdrawal period was 67½ grains (4.4 Gm.), the average amount in the twelve cases being about 40 grains (2.6 Gm.). A single dose produced usually a state of sleep, and if 15 grains (1 Gm.) or more was taken, a condition approaching surgical anesthesia was induced. In from four to six hours, however, the patients awakened and showed marked restlessness. Subsequent administration failed to abate the restlessness noticeably, and in fact seven of the patients became delirious and had to be forcibly restrained. Except during the sleeping period the withdrawal symptoms were present in full intensity, prostration was definitely increased, approaching collapse in two cases, and the whole management of the patient became more difficult. It was concluded from this study that iso-amylethyl barbiturate is useful only when given in a single dose for the purpose of inducing a temporary state of quiet.

In view of the unsatisfactory results observed in the studies described, a study of what is known as the reduction treatment was made. In this treatment the drug of addiction is continued but in progressively decreasing dosage until a zero point is reached. Two groups, each of twenty-five patients, were used for this study. In one a period of seven days, in the second a period of fourteen days, was allowed for the complete withdrawal. Before the treatment was begun, the daily ration of morphine sulphate required to maintain a state of comfort in the patient was determined. In most instances 3 grains (0.2 Gm.) of morphine sulphate daily was sufficient; a very few required 6 grains (0.4 Gm.).

In the seven day reduction treatment a solution of morphine sulphate was prepared, usually of the strength of one-fourth grain to 7 minims (16 mg. in 0.4 cc.) and an aliquot part of the daily ration injected every four hours. On each succeeding day the dosage was decreased by one seventh of the beginning one.

In the fourteen day reduction treatment the same procedure was employed, except that the daily decrease was one fourteenth of the beginning dose. At the end of the seven or fourteen day period, injections of saline solution were given until all withdrawal symptoms were over.

In the seven day reduction period, symptoms of withdrawal appeared in each instance, but their severity was less than half that of the standard. The patients were able to take sufficient nourishment to maintain their strength and weight and the convalescent period was much shortened.

In the fourteen day reduction period, also, withdrawal symptoms appeared, but these were still less marked. In the majority of instances, twenty-one out of the twenty-five, the withdrawal symptoms were

recorded as "light"; that is, there was no striking mental or physical discomfort. It may be pointed out here that in none of the fifty patients was there any sign of collapse or other alarming condition.

From what has just been said, it follows that the reduction treatment, especially if carried out over a period of fourteen days or more, is the most humane, in that it involves the least suffering. It is also the safest as regards danger to life, and can be used in any case of drug addiction.

One other study was made along this line of a rapid reduction of morphine and a more gradual reduction of codeine given with the morphine. Morphine, one-fourth grain (16 mg.), was given every eight hours, each day the dose being one half that of the preceding day, and stoppage occurring on the fourth day. Codeine phosphate was given in five grain (0.32 Gm.) doses every eight hours for four days, being alternated with the morphine, so that an injection of one or the other was given every four hours. On the fifth day, when the morphine was discontinued, codeine was given every four hours in 5 grain doses, on the sixth day in 3 grain doses and on the seventh day in 1 grain doses. It was then stopped and saline injections were substituted until the withdrawal symptoms were over. The results of this treatment seemed somewhat better than those of the seven day morphine reduction period, but not as satisfactory as those of the fourteen day reduction method.

There were certain general measures employed as a routine to add to the patients' comfort which may be briefly mentioned. When treatment is begun, a catharsis is desirable. Severe purgation is undesirable as it may lead to intensification of the intestinal symptoms. A moderate catharsis, such as that induced by two compound cathartic pills, 1 ounce (30 cc.) of castor oil or one-half ounce (15 Gm.) of magnesium sulphate, gave the best result. The diet was carefully selected to allow of adequate nourishment with the least bulk. There is often a craving for sweets, which was gratified. During the period of nausea and vomiting, fruit juices were most apt to be retained. Alkalis in the form of sodium bicarbonate, 30 grains (2 Gm.) every four hours, were useful in combating the mild acidosis present. Bismuth subcarbonate seemed to be of some slight help in lessening the gastro-intestinal symptoms. Massage, hot baths and local heat were of use in relieving muscular symptoms and producing mental distraction. These and other similar measures, while they may have offered some relief, did not, however, materially check the intensity of the symptoms.

In cases of dangerous prostration or collapse, the best procedure was to administer adequate doses of morphine, with an accompanying ½ or 1 ounce of whisky. Epinephrine was useful in strengthening the circulation but caffeine, strychnine and digitalis were found to be of doubtful value in these cases.

Finally, proper encouragement, suggestion and mental distraction were helpful in lessening the patients' anxiety and making them more cooperative.

SUMMARY

In summarizing the results of the work done at Bellevue Hospital, the following practical conclusions concerning treatment of the withdrawal stage in necrotic addiction become apparent.

1. None of the substances forming the basis of the so-called specific cures for drug addiction bring about amelioration or shortening of the withdrawal symptoms.

2. Depressants of the central nervous system are ineffective or not practical as substitutes for opium derivatives.

3. The quickest and simplest method of stopping the addiction is that of abrupt withdrawal of the narcotic taken. Among the advantages of this method are the shortness of the time involved, three days as a rule, the avoidance of any complicated system of medication, an easier prevention of the addict surreptitiously obtaining narcotics during the period, and finally an impressive mental effect on the addict, with a striking feeling of relief when the withdrawal stage is over. The disadvantages are the suffering involved, mild in many instances but very severe in others, and the prostration and collapse, which may cause death. As has been pointed out, the abrupt withdrawal treatment should be limited to those addicts who on careful examination are found to have no serious organic degeneration or disease, are not of advanced age, and are not suffering from marked malnutrition.

4. The most humane form of treatment is that of giving progressively decreasing doses of morphine. Two weeks at least should be allowed for this reduction treatment. The advantages of this method are the absence or great diminution of severe suffering and its safety as regards collapse and danger to life. The disadvantages are the time involved, the absence of the favorable psychologic effect of the abrupt withdrawal, and the greater and more prolonged vigilance required to prevent the addict obtaining his narcotic.

With this summary, the committee recommends that all addicts undergoing treatment be under capable medical supervision, that those whose general condition warrants it be subjected to abrupt withdrawal, and that those not included in this class be given the reduction treatment.

REHABILITATION

It has been pointed out that no form of treatment for the withdrawal of addiction narcotics is in itself capable of stopping the craving for the drug. Sooner or later the desire returns in full force and addiction again occurs. A withdrawal treatment by itself, therefore, is only an administrative routine, to be carried out as often as the addict receives a court sentence and with no probability of bringing about a lasting abstinence. The real problem is that of ridding the addict of his habit permanently or at least over a long period of time. There is unfortunately no practical method known which, applied to those addicts coming under the supervision of the department of corrections, would accomplish the desired result. Various attempts at rehabilitation have been made in the past and are being made at present, and an account and critical analysis of these is given in a detailed report of rehabilitation by Dr. Lambert. But while much may be learned from these attempts, it is evident that a new plan must be developed to meet local conditions.

In carrying out a study of rehabilitation in New York City, certain basic principles may be laid down. The end in view is to bring about an adjustment of the addict to an environment which allows him to maintain his self-respect and become of use to the community; in other words, to end his being a continued expense and even a menace to the city, and make him a self-supporting, productive citizen. To secure such a result, it must be assured that the addict has learned a trade or line of work through which he may be self supporting; that a position be found for him when he is prepared; that his progress for a number of years be

supervised and checked up through some form of parole, and finally that he be brought to a state of mind whereby he becomes cooperative and honestly desires to be permanently free of his habit. It is clear that this accomplishment is a matter of great difficulty. A large percentage of addicts are psychopathic; a large number oppose any effort at rehabilitation; many prefer the up and down life of addiction to the more monotonous one of steady labor. It would seem possible, however, through a short period of observation to eliminate those from whom nothing can be expected by way of rehabilitation, and to select and work on those who give promise of a successful result. How many there would be in the latter group is problematic, but it is probable that there could be added to it a considerable number of individuals who are beginners in drug addiction or whose acts have not brought them in contact with the police.

The personnel of the staff in charge is a matter of prime importance. It should be headed by a man of broad understanding of human character, eager for the success of the experiment, and willing to devote several years to the work. Such men are difficult to find and much effort must be made to select the right one. A follow-up staff, of the social worker type, is equally important to carry out supervision of the addict after discharge from the institution.

A location for carrying out the first steps for rehabilitation would have to be selected with great care. It should be isolated to the extent that the smuggling in of narcotics can be prevented. It should not, however, carry the impression of a prison, but rather that of a sanatorium. There should be all the necessary equipment for occupational therapy and training, and for other features of the general plan.

There would have to be some arrangement made whereby the addicts would not be free agents until finally discharged. This means a binding commitment of some sort over a period of years in the case of those in whom a favorable prognosis is made and the privilege of discharging at any time those from whom no good results can be expected.

The successful carrying out of such a general plan involves not only great difficulties, on account of the character of the work with its innumerable details of organization and administration, but also a considerable expense as well. It might even be advisable, therefore, for the city not to attempt to carry it out by itself, but to cooperate with some outside group, which has a rehabilitation scheme on its program. The city's share would be supplying the location and buildings, arranging for the commitment of the addicts, organizing the outside groups, financing the treatment, and supplying the personnel. It would seem that some such arrangement as this would give most promise of success. It is understood that any plan for rehabilitation would be in the nature of an experiment. It must of necessity be sufficiently elastic to allow of frequent alterations and in fact will vary in detail according to the individual addict. Until it is clearly outlined, until the necessary conditions of the experiment are satisfied, and especially until a thoroughly qualified man is found to conduct the work, it would be useless to attempt it. But if carried out in a proper manner, it would bring out facts of great value and throw light on many problems which challenge present-day civilization.

The committee desires to express its appreciation of the work done by Dr. Charles Schultz, who ably and conscientiously carried out the work under the direction of the committee.

The committee feels unable to close its report without an expression of its sincere appreciation of the whole-hearted cooperation and unflagging interest shown by Commissioner Patterson in the solution of the problems.

ALEXANDER LAMBERT, Chairman.

STANLEY R. BENEDICT.	ISRAEL STRAUSS.
MENAS S. GREGORY.	GEORGE B. WALLACE.
THOMAS A. MCGOLDRICK.	LINSLY R. WILLIAMS.

IRRADIATED FOODS AND IRRADIATED ERGOSTEROL *

KATHARINE BLUNT, PH.D.
AND
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As long ago as 1924 the striking observation was made almost simultaneously by Hess and by Steenbock and Nelson that many foods could be made antirachitic by irradiation with ultraviolet rays. Some of the first successes in this line have already been referred to in earlier chapters: Hess's demonstration that his irradiated cottonseed and linseed oils were as potent as cod liver oil to cure rickets in rats; Steenbock's similar showing with his whole irradiated diet; and, particularly significant, Steenbock and Daniels' proof that even nonrachitic babies could have their calcium retention increased by feeding irradiated olive oil instead of ordinary olive oil. Daniels' later article is even more striking than this earlier work. She found her irradiated milk and her irradiated olive oil both more effective than cod liver oil. The reason for this superiority she is unable to explain. She suggests that the milk and the oil, which were irradiated in her laboratory under constant conditions, were very uniform and also that perhaps not a large enough dose of cod liver oil was fed. Our interest here is less in comparison with cod liver oil than in the fact of the high potency for children of these two irradiated foods.

IRRADIATED FOODS

The foods which have been successfully irradiated include a long list: numerous oils and fats—olive, cottonseed, linseed, corn and coconut oils, lard, oleomargarine and butter, but not liquid petrolatum; cereal products—refined wheat flour, whole wheat flour, shredded wheat, cream of wheat, oatmeal, cornmeal, cornstarch; meat; milk, whole or dry; various vegetables; orange juice. The potency of egg yolk was increased from ten to twenty times. Sugar is almost the only natural food for which attempted irradiation has been unsuccessful; rancid oils, too, cannot be activated, apparently because the activatable substance is destroyed during the development of the rancidity.

Irradiated Milk.—Naturally enough, milk is one of the foods whose irradiation has been especially studied, not alone by Daniels but by numerous others. If this common food, with only moderate antirachitic potency, could be made a real preventive of rickets, its possibilities for good would seem to be much increased.

Numerous experiments besides Daniels' have been described in which irradiated milk has been fed with

* This article is a chapter from the book "Ultraviolet Light and Vitamin D," to be published shortly by the University of Chicago Press.

success both to animals and to children. For example, in Baltimore, eight young children with active severe rickets, when put on a diet of orange juice, cereal and irradiated milk, showed marked or complete healing in four weeks. The serum phosphate increased to approximately normal, and there was marked increase in the calcium and phosphorus retained by the two children on whom balance experiments were made. Hess, also, and Cowell, in England, have successfully experimented with irradiated milk, and recently a German investigator reported treating about sixty rachitic children with milk which had been exposed to ultraviolet rays in an atmosphere of carbon dioxide so that it had no unpleasant taste or odor. Of the twenty-four reported on in detail, all were cured or much improved by the giving of from 300 to 600 cc. daily for from four to five weeks. For eighteen premature infants from 10 to 25 Gm. daily served successfully as prophylactic against rickets. The cost of the treatment was about one-tenth that of direct irradiation of the children.

On the other hand, some children that were given all the milk in their feeding formula in the form of irradiated, powdered whole milk did better than others with only 25 per cent of their milk irradiated, the first group showing almost complete protection from any sign of rickets, the second showing fairly good results (De Sanctis et al.). With not only the human variable but the variable in method of treatment of the milk, such slight contradiction in results is to be expected.

Hess and his co-workers [1] write:

> We have had no clinical experience with irradiated fluid milk, which is being dispensed in some of the large communities of Europe, notably Frankfort and Basel. Irradiated dried milk has, from the outset, seemed to be a valuable preparation. It has a definite antirachitic property which is not lost by aging, nor is its content of vitamins A and C essentially diminished during the course of activation. This product is of moderate potency and is suited for preventive rather than for curative purposes; it is not adequate in itself to protect premature infants.

These are only a few of the satisfactory experiments reported on children. Yet a recent German paper, which has been much quoted, entitled "Toxicity of Foods After Exposure to Ultraviolet Rays" gives rather incomplete data showing pathologic changes in the blood, spleen, kidneys and myocardium of mice and guinea-pigs fed irradiated milk and other irradiated foods. The results are so contrary to those of other investigators that one tends to be hesitant in accepting them, though of course they make one cautious about overconfidence. The possibility of harm from overdosage of irradiated ergosterol is discussed later.

Other Foods.—Few experiments on children have been carried out with other irradiated foods. In our laboratory at present, balance experiments are in progress with two young children, a girl of 2 and a boy of 4, ordinary and irradiated Quaker oats being used as important constituents of the diet, but too few results have so far been secured to report.

Dr. Steenbock has courteously given us the data presented in the accompanying table on the ash of the fat-free bones of rats fed irradiated and nonirradiated cereals for five weeks. The figures, which are averages of analyses on four animals, in each case plainly show the potency of the irradiation.

1. Hess, A. F.; Lewis, J. M., and Rivkin, Helen: The Status of the Therapeutics of Irradiated Ergosterol, J. A. M. A. **93**: 663 (Aug. 31) 1929.

It must be remembered, in transferring the results of these animal experiments to human feeding, that the diet of the animals may contain a much larger proportion of the irradiated food than the diet of a child usually can. Steenbock gets his very striking results on the increase of the bone ash of rats by incorporating in the rations 76 per cent of the different cereals—irradiated or nonirradiated. When Bacharach and Jephcott distinguished samples of cereal irradiated five, fifteen and thirty seconds from one another and from nonirradiated by means of the lowering of the fecal p_H, they made the cereal 25 per cent of the rat's diet. A young child eating even a generous quantity of cereal will probably make it not more than 10 or 15 per cent of the total solids consumed, so that effects as striking as those with animals are hardly to be expected.

Ash of Bones of Rats Fed Nonirradiated and Irradiated Cereals

Cereal	Nonirradiated	Irradiated
Farina	29.4	51.6
Muffets	43.2	52.7
Pettijohn's	30.9	49.2
Quaker oats	36.0	51.6
Macaroni	32.9	48.0

Methods of Activating Milk and Other Foods.—For milk, possibly even more than for other foods, the conditions of activation may give great differences in the product. Too long irradiation develops a disagreeable taste and odor, variously described as fishiness or rancidity. Twenty minutes will give this, or even in some cases five. There is considerable evidence that the change really is due to rancidity and resembles that produced in commercial fats and oils by exposure to light and heat and oxidation. A positive test for nitrites in the milk has also been secured. Long irradiation may also have the harmful effect of destroying vitamin A, so that gain of one vitamin may be overbalanced by loss of another.

It has been thought that atmospheric oxygen hastened the objectionable actions, so irradiation has been carried on in carbon dioxide and in nitrogen, but now it seems more probable that the ozone generated by the short radiations of light does the harm and that adequate ventilation during the process lessens it.

Short exposure, however, with its diminished danger of unpleasant change seems to be entirely successful. Supplee and Dow report that by thirty seconds to three and one-half minutes' irradiation a milk can be produced with enough antirachitic potency to cure rachitic rats and decidedly increase the ash in their bones and to prevent the development of rickets. Oils and other foods reported from laboratories have generally been exposed for a longer time than milk—usually thirty minutes.

The process consists of exposing the material in a thin layer, often not more than one-eighth inch, at a distance usually of about 2 feet, to the quartz mercury vapor lamp, the food sometimes being passed slowly under the lamp or a series of lamps. The carbon arc has also been used as the source of ultraviolet.

The Stability of the Activation.—Apparently the antirachitic activity thus developed in foods is fairly permanent. Tests made on activated olive oil, kept for months after irradiation in a stoppered bottle in the dark, showed its value unchanged; and irradiated dried milk kept for six months in a cupboard under ordinary

conditions had lost but little of its potency, and even after a year it had deteriorated only moderately. Some irradiated spinach and lettuce were just as active after cooking as before. Even the violent chemical procedure of boiling with alcoholic alkali, as in saponification of an irradiated oil, does not destroy the active substance.

The potency is lost when exposure to ultraviolet radiation is carried out too long. Activated olive oil lost its activity after seventeen hours' exposure to ultraviolet rays and so even did cod liver oil.

THE WISCONSIN PATENTS

The commercial situation for these irradiated foods is very unusual. Dr. Steenbock at the University of Wisconsin has patented the process of irradiating foods and medicinals by ultraviolet rays, but he has assigned his patent to an organization formed for the purpose of receiving it—the Wisconsin Alumni Research Foundation. The foundation may license manufacturers desiring to use the process and control their procedure, their product, and even their advertising. Profits from the licenses go to the foundation, not to Steenbock himself, and the profits promise to be large. Rights to manufacture under the patent have already been sold to the Quaker Oats Company, which has two irradiated cereals on the market, and also to other companies in the United States, England and Germany.

WHAT WILL FOOD ACTIVATION DO FOR THE GENERAL HEALTH?

What these irradiated foods will accomplish for public health is difficult to foretell. The possible value seems very great. With the limited natural distribution of vitamin D and the limited sunshine of northern winters, a cheap, palatable, readily available food with antirachitic potency may be an important contribution to national health. "Taking your daily dose of sunshine as you eat," as one of the popular writers has it, is very appealing and may be very valuable. Commercial enterprise, however, may exploit to a foolish extent an agency valuable in moderation and unnecessarily bring up the cost of food by an added more or less expensive process. (The Quaker Oats Company sells irradiated cereal with no advance in price over the nonirradiated.) An important possible though not probable disadvantage will shortly be brought out more in detail in the section on irradiated ergosterol—there is real danger in excessive doses of this antirachitic factor. It is conceivable that a child of anxious parents, given cod liver oil and light treatments and irradiated food, might come to serious harm. The future will thus have to tell more definitely the value of these irradiated foods. It looks now as if, wisely and conservatively used, they are a valuable discovery.

IRRADIATED ERGOSTEROL AND THE CHEMISTRY OF VITAMIN D

The question naturally arises as to the chemical composition of vitamin D. What is the substance in cod liver oil or in activated foods which gives them their antirachitic potency? The definite answer has not yet been obtained but a rather surprising amount of information pointing toward it is already at hand. The main discoveries in connection with it brought the Nobel Prize to the German investigator Windaus and the honor of academic priority to Hess.

Unsaponifiable Fraction the Potent Part of Fats.—First of all the vitamin is not a fat, but, when cod liver oil is saponified by boiling with sodium or potassium hydroxide, the small unsaponifiable fraction which may be extracted from the soap by ether is found to possess all the antirachitic potency of the original oil. It is as effective in promoting calcium assimilation, as shown by improvement, for example, in the calcium balance of animals, as are equivalent amounts of the cod liver oil from which it came. The unsaponifiable portion of other fats and oils, like the oils themselves, is inactive except when the oil has been made active by irradiation.

Composition of the Unsaponifiable Fraction.—The unsaponifiable fraction of oils and fats has long been known to consist largely of sterols (solid alcohols), chief among which are cholesterol in animal fats and phytosterol in vegetable oils. Cholesterol, the best known, occurs also in the brain, skin and blood—in fact, in very small amounts in every cell of the body. A third sterol, ergosterol, very similar in composition to cholesterol but more unsaturated, can be extracted in relatively large quantities from fungi, yeast and mushrooms, and especially from ergot. Its formula is $C_{27}H_{42}O$, while that of cholesterol is $C_{27}H_{46}O$. Until very recently ergosterol was thought not to be present in animal cells and to have no biologic significance, but current experimental work is showing the facts of its distribution to be quite otherwise.

Cholesterol or Ergosterol as the Provitamin.—Since cholesterol is the chief component of the active unsaponifiable fraction of cod liver oil, it was logical to discover whether cholesterol from other sources which were themselves inactive could be activated by ultraviolet radiation. In 1925, Hess and Weinstock, and Steenbock and his co-workers both reported that the purest cholesterol then obtainable when treated with ultraviolet rays developed marked antirachitic potency. The hypothesis was therefore tentatively brought forth that cholesterol might be the parent substance from which vitamin D is formed by ultraviolet rays.

But this hypothesis was short lived, for further purification of cholesterol has since given a product which on irradiation either does not develop antirachitic potency at all or develops it to a very slight extent. (Bills and Honeywell find that such very pure cholesterol does bring about slight healing of rickets when reirradiated and fed in quantities thirty times as great as the original active "pure" cholesterol, an effect which they believe due not to a small amount of persisting impurity but to the very weak activability of the sterol itself.)

Meanwhile, before the experiments on this highly purified cholesterol had given such definitely negative results, work begun on the little known ergosterol had shown it to possess the remarkable property of acquiring antirachitic potency on irradiation to an extent two thousand times as great as cholesterol, and also had proved it to be the contaminant of the ordinary "pure" cholesterol. The extraordinary activity of irradiated ergosterol has been demonstrated by numerous investigations on rachitic rats, on puppies and even on children. Its beneficial effect on blood calcium and phosphorus levels, on the retention of calcium and phosphorus and on the calcification of the bones is immediate and spectacular. Amounts as minute as 0.0002 mg. are sufficient to give a positive line test in rachitic rats or, in terms of other workers, samples have been obtained a million times as active as average cod liver oil.

Light Absorption Observations.—Much of this advance in knowledge about the activation of ergosterol and cholesterol has been made by a method heretofore

little used by biochemists—the study of their absorption of light.

Solutions of many chemical compounds have the property of absorbing light of definite wavelengths, so that their "absorption spectrum" is as characteristic of them as any of their other physical properties, such as melting point or optical activity. To obtain the absorption spectrum the investigator has first a light source containing ultraviolet radiations; secondly, a quartz prism through which the light passes to form the spectrum; then the solution to be tested contained in a quartz vessel through which the spectrum is passed, and finally a sensitive photographic plate on which the spectrum is recorded. If the liquid in the quartz vessel is one which does not absorb light, such as pure alcohol, the photograph gives the continuous spectrum from the light; but if it is a solution of ordinary cholesterol or of ergosterol, certain definite bands appear as dark spaces in the spectral photograph, showing that light of these wavelengths is absorbed by the solution.

It was found early that the absorption bands observed in ordinary pure cholesterol diminish in intensity on repeated purification and finally disappear. The purest cholesterol in 3 per cent solution does not show selective absorption. Pure ergosterol, however, shows intense absorption bands with maximums at exactly the same points as those for ordinary cholesterol—293.5, 282, and 270 millimicrons, and also a faint but distinct line at 260 millimicrons.[2]

Bills and Honeywell, working with MacNair of the Bureau of Standards, found that a solution containing 0.0030 per cent of ergosterol gave slightly less intense absorption than a 3 per cent cholesterol solution, and one with 0.0040 per cent ergosterol slightly more intense. They therefore could compute that their cholesterol contained 0.12 per cent ergosterol. Interestingly enough, they obtained exactly the same result by a method chiefly chemical—following the decomposition of the ergosterol by potassium permanganate—so that they had corroboration of their spectroscopic procedure.

So much for a clear-cut difference between cholesterol and ergosterol. Ergosterol can absorb certain light energy, and cholesterol[3] cannot. Ergosterol develops antirachitic potency on irradiation, and cholesterol does not. What are the changes brought about by this light energy?

Changes Taking Place When Ergosterol is Irradiated.—Knowledge on this point is still far from complete, but by parallel spectroscopic, biologic and chemical methods, progress is being made. First, a report of a biologic and spectroscopic investigation by Bills and his co-workers. By carefully controlled irradiation and their feeding methods already described, they found that in seven and one-half minutes' irradiation their ergosterol had attained a potency of 150,000 on this scale (average cod liver oil being 100), in fifteen minutes 225,000, and in twenty-two and one-half minutes 250,000. On further irradiation the potency went down sharply; in thirty minutes to 200,000 and in two hours to 50,000; in three hours it had almost vanished. That is, the tremendously active vitamin D is first formed from ergosterol and then decomposed.

Change in the absorption bands of the ergosterol did not come quite so soon as change in the antirachitic potency. When the potency was at its height, the absorption was almost the same as for the original nonirradiated ergosterol, showing that considerable of the unchanged ergosterol was still present, and possibly that vitamin D has much the same absorption spectrum as ergosterol. On continued irradiation, as the potency declines, the ergosterol bands diminish in intensity and finally disappear, and meantime a new band comes at 248 millimicrons. This new band must be due to the formation of a new substance, not vitamin D, for its appearance coincides with the destruction of antirachitic potency. Finally, after the irradiation has been kept up for fifteen hours, this line at 248 millimicrons also goes. The story, therefore, as Bills sees it, is that irradiation of ergosterol produces at least two substances, the unstable vitamin D and another less unstable, antirachitically inactive substance which may come more slowly from the ergosterol or may be a decomposition product of D.

A beginning has also been made in following the chemical changes on irradiation. Ergosterol, like cholesterol, has the property of forming an insoluble substance with digitonin. With nonirradiated ergosterol the precipitation is complete and the filtrate contains only traces of material. With the irradiated, however, precipitation is not complete and the filtrate gives on evaporation a transparent, glassy, hard solid, much more soluble in alcohol than ergosterol and having an entirely different melting point and different absorption of light. It has all the antirachitic power of the irradiated ergosterol; it is, or much more probably it contains, the vitamin D (Webster and Bourdillon).

The biophysicist is interested in the amounts of light energy required to form vitamin D from ergosterol. Investigators at the University of Wisconsin by experiment and computation have come to conclusions that will be given only briefly here. To make enough vitamin D for a minimum biologic line test on a rat requires from 700 to 1,000 ergs. This value is constant for radiations of a number of different wavelengths—256, 265, 280 and 293 millimicrons. From this energy measurement, making use of Einstein's law of photochemistry, it is possible to compute the number of molecules of vitamin D formed, 10×10^{13}; and from this by Avogadro's number and the assumption that the molecular weight of vitamin D is essentially the same as that of cholesterol, the minimum weight of vitamin necessary for a positive line test, or 6×10^{-8} Gm., may be estimated. Coward, by use of irradiated ergosterol of maximal potency, considers that she has confirmed this prophecy as to the minimum quantity of D for positive line test.

Distribution of Ergosterol.—This sterol, as already stated, is found in largest quantities in ergot and in yeast, but it also seems to occur wherever cholesterol is found. All samples of cholesterol so far tested for ergosterol have contained it in small amount—from cod liver oil, brain, spinal cord, gallstones, skin and blood. It has been detected in the eggs, brain, liver, spleen and ovaries of the lower forms of animal life, and it has been isolated from beef blood in almost pure form, and even from human blood it has been separated and identified by its characteristic absorption bands. Phytosterol, too, the sterol common in plants, is accompanied by ergosterol. It appears to be the most widely distributed of all sterols.

2. It is particularly interesting that the light waves which ergosterol absorbs and which activate it are so close to those which have so far been proved especially active in the cure of rickets by direct irradiation of the animal—302 and 265 millimicrons.

3. Bills, Honeywell and MacNair found that a strong solution of their purest cholesterol does show faint absorption bands when the light is passed through a deep layer of it, bands different from those of ergosterol and far less intense. This is in accord with the very faint antirachitic potency of the cholesterol.

Recrystallized sterol from red blood cells containing ergosterol or some closely related sterol has been tested on rats for antirachitic potency at the University of Stockholm. Irradiated, it showed much activity, but even without irradiation it had some effect—quite startling indication of the presence of vitamin D in the animal's circulation.

Further information about the distribution of ergosterol is highly desirable, and especially quantitative information. We are probably justified in assuming that the extent to which any food can be irradiated depends at least in large part on the amount of ergosterol it contains. We can feel fairly sure, for example, that oils with their relatively high proportion of sterols can be more strongly activated than cereals with their smaller quantity, but our knowledge is far from accurate.

Color Reactions of Irradiated Ergosterol.—In addition to the changed absorption spectrum and the failure to precipitate completely with digitonin, irradiated ergosterol shows certain other reactions which the nonirradiated does not. For example, irradiated ergosterol gives a violet color with fuchsin-sulphuric acid reagent, while the nonirradiated does not, and it will also reduce ammoniacal silver oxide to a stable colloidal silver solution while the nonirradiated will not. It gives a red color on boiling with aniline hydrochloride, as do oils which contain vitamin D, and as also do certain unsaturated ketones. These reactions suggest that irradiation has transformed the original substance into an aldehyde or an unsaturated ketone; that vitamin D may itself be a ketone, or else that a ketone is produced with the vitamin on irradiation of ergosterol.

Effect of Changes of Temperature on Vitamin D.—Vitamin D appears to be fairly resistant to heat and cold if dissolved in a neutral medium. An exposure of one hour to temperatures down to — 60 C. does not destroy it and heating for one and one-half hours at 130 hardly affects it. There is slight destruction if it is heated to 140-145 for one and one-half hours, and almost complete destruction if it is heated for the same length of time at 165-170. It is, however, destroyed much more rapidly if heated in either acid or alkaline solution. In this case heating for one hour at 100 is sufficient to destroy it if the acid or alkali is of tenth-normal strength.

The Unique Position of Ergosterol.—Several other sterols are known which are associated with ergosterol in yeast or ergot as well as a number of other compounds closely related chemically to cholesterol or ergosterol. It was a point of interest to find whether any of them behave like ergosterol. No one of them so far tested has been found to have absorption bands in the ultraviolet and, as would be expected from this fact, no one has been given antirachitic potency by irradiation. The work has strengthened the theory that ergosterol is unique; is, in fact, the parent substance of vitamin D.

IRRADIATED ERGOSTEROL FOR CHILDREN

The discovery of the remarkable power of irradiated ergosterol to cure rats with rickets was promptly followed by tests of its power to cure rachitic children, and from many clinics where it has been used come glowing accounts of the rapidity and reliability of its action. Dr. Alfred Hess has called irradiated ergosterol "one of the most remarkable of specifics," and other physicians have pronounced it the "therapeutic agent of choice" both for rickets and for tetany.

An important reason for the enthusiasm over irradiated ergosterol lies in the fact that because of its tremendous potency the dose needed is very small, usually from 1 to 4 mg. daily. For a dose of this size only 2½ to 10 drops of a 1 per cent solution of irradiated ergosterol in oil is needed. Such a dose has been calculated to be the equivalent of from fourteen to fifty-six teaspoonfuls, or more than one cup, of a good grade of cod liver oil![4]

The practical advantages of giving maximum quantities of vitamin D with minimum quantities of oil are apparent, especially for children whose digestive systems are weak and who therefore cannot tolerate large quantities of fat. Such children, if they have rickets, often cannot take as much cod liver oil as they need to cure them and healing takes place very slowly, if at all. They improve very quickly, however, on irradiated ergosterol. A number of cases of this kind have been described within the last year, several of them by Hess and Lewis, who report a rapid disappearance of the signs of rickets after two or three weeks on irradiated ergosterol, when three teaspoonfuls of cod liver oil given daily for five weeks had previously proved ineffective.

Even the normal infant, especially if he is growing rapidly, may benefit by the use of this new compound, since occasionally the standard dose of cod liver oil—one teaspoonful three times a day—fails to protect him from at least a mild degree of rickets. More than three teaspoonfuls of fat a day is usually not considered wise for any baby. Therefore, a more concentrated form of the vitamin is needed for the prevention as well as for the cure of rickets.

A second advantage of irradiated ergosterol over other forms of antirachitic treatment is the speed with which results are obtained. During the last two years numerous instances of remarkably rapid cures have been described. At the Hospital for Joint Diseases in New York, Drs. Sobel and Claman have for a number of months been treating a selected group of children with a commercial preparation of irradiated ergosterol. In some instances they describe the effects to be "not only prompt but . . . dramatic," as when they found it not uncommon for a marked case of craniotabes (softening of the bones of the skull) to be cleared up in two weeks. Very rapid calcification of the ends of the long bones, often beginning in two weeks and becoming marked in four, also occurred in cases of active rickets, and the inorganic phosphorus of the blood, which was low to start with, became normal in from a week to ten days. Such remarkably rapid healing has never been obtained with any other method of treatment.

Infantile tetany also yields promptly to dosage with irradiated ergosterol. Drs. Bakwin and Bakwin of New York have compared the time required to obtain results with irradiated ergosterol, ultraviolet radiation and cod liver oil, and have come to the conclusion that irradiated ergosterol is much to be preferred. Cod liver oil, in comparison, is "slow" and "inconstant"; in one case convulsions occurred nine days after the oil was begun, and in others the blood calcium returned to normal only after sixteen or more days of treatment. With ultraviolet rays the blood calcium rose to normal

4. These figures are based on work with the early, unstandardized preparations of irradiated ergosterol. "Viosterol," the new, standardized product, is much less concentrated, the prophylactic dose of from 8 to 10 drops being the equivalent of about 3 to 5 teaspoonfuls of cod liver oil.

levels in fourteen days, but with irradiated ergosterol the calcium became normal in an average of seven days. The clinical symptoms disappeared at once, convulsions being present in only one case out of fifteen after the first day.

Many other instances of speedy and even dramatic results obtained with this new compound might be quoted. Hess summed up these studies with the following statement:

> In all cases this new therapeutic agent has been found to be reliable in the prevention as well as in the cure of rickets . . . its action has been remarkably rapid, all signs of rickets disappearing more quickly than has been accomplished heretofore with cod liver oil, its concentrates or with direct irradiation (1928).

After another year's experience with this substance, he now writes (Aug. 31, 1929):

> "Beginning in October, a large group of infants was given . . . irradiated ergosterol in various amounts, ranging from minimal doses to what might be considered generous amounts. . . .
>
> Our results were well defined and can be summarized in a few words. . . . Full term infants were protected from rickets, almost in every instance, except when the smaller amounts were given. . . . In an occasional case, mild beading of the ribs, craniotabes or bowing of the legs developed. Of course the spectacular healing, for example, of craniotabes, which was brought about by large amounts of irradiated ergosterol, cannot be expected when much smaller amounts are given. In spite of partial failures, irradiated ergosterol must be regarded as one of the most remarkable of specifics. In therapeutics there is no such thing as an absolute or infallible specific; all fail to a certain extent occasionally.
>
> It will be noted that emphasis has been laid on the success of treatment in infants that were born at full term. It is highly important that this distinction should be borne in mind, for it will be found, not infrequently, that preparations of irradiated ergosterol given in adequate doses will fail to protect rapidly growing premature infants. As will be brought out in the discussion of dosage, such babies require very large amounts of irradiated ergosterol, and even when this precaution is observed it may be found that rickets has not been entirely prevented.

DANGERS OF IRRADIATED ERGOSTEROL

Enthusiasm for irradiated ergosterol must, however, be tempered with caution, since, like many other potent drugs, large doses of it may be distinctly dangerous. In this respect it may also be compared with the internal secretions of glands, such as the thyroid or the pancreas, which in minute quantities are absolutely essential for normal physiologic activity but which in large quantities function as violent poisons. The comparison becomes the more vivid if we assume, as is entirely possible, that vitamin D promotes calcification in the body through the stimulation of the parathyroid glands.

Fatal Effects of Very Large Doses.—One of the earliest investigations designed to demonstrate the effects of large doses of vitamin D was that of Kreitmair and Moll, two workers in the research laboratories of a large chemical and drug manufacturing firm in Germany. In the course of this investigation it developed that exceedingly large doses, at least ten thousand times the minimal protective dose, caused a rapid loss of weight, followed by death within a short space of time, not only in white mice and rats but also in guinea-pigs, rabbits, cats and dogs. All these animals presented the same picture of definite and severe disease—loss of appetite, rapid loss of weight, severe emaciation and decided decrease in vigor. They often developed diarrhea, and the hair became rough and shaggy. Death followed in varying lengths of time for different animals, from an average of ten days for the rabbit to thirty-six days for the guinea-pig.

Pathologic Changes in the Tissues.—After death enormous deposits of calcium were found in the walls of the blood vessels and of the vital organs, as the heart, stomach and kidney, evidence that calcification had been stimulated to the point where the mineral was deposited in any and all tissues that would receive it, whether or not it was needed or even useful there.

These experiments have been repeated and similar results obtained by a number of other investigators, notably Drs. Smith and Elvove of the United States Public Health Service, Dr. I. J. Klein of the Jewish Hospital of Brooklyn, a group of experimenters working in Spain, and L. J. Harris, Thomas Moore and C. P. Stewart, in England.

Blood Calcium and Phosphorus.—In only a few of these studies have the figures for blood calcium and phosphorus been determined. Whenever such determinations have been made, a striking rise in blood calcium or phosphorus or both has been observed. Klein reports a 50 per cent increase in the serum calcium of his rats although the phosphorus remained practically unchanged, while Harris and his associates observed a 25 per cent rise in the blood calcium and a 50 per cent increase in the inorganic phosphorus. The urine in the latter animals also was "literally saturated" with calcium salts. Evidently there had been a marked overflow of calcium from the blood into the urine, but in spite of this, and in spite of the huge deposition of calcium in the tissues, the concentration of calcium in the blood still remained far above normal.

Calcium Content of the Skeleton.—Apparently the high concentration of calcium and phosphorus in the blood is maintained at the expense of the deposits of these minerals in the bones, for Hess reports that the bones of rats after fourteen days of excessive dosage with irradiated ergosterol contained only 48 per cent of ash, as compared with 52 per cent in the bones of normal controls. He also quotes Hottinger, who found that very large amounts of irradiated ergosterol, when given to puppies, led to negative instead of positive balances of calcium and phosphorus.

Effects of Size of Dose.—The toxic effects of excessive doses of vitamin D appear to be in direct proportion to the size of the dose. Early work in Germany showed that when 2 mg. of irradiated ergosterol was fed daily to a group of white mice, sickness and death occurred within a very short time, in some cases within a space of six days. On 1 mg. a day the mice became sick but lived somewhat longer. Half a milligram daily produced only a loss of weight without further illness, while 0.2 mg. was taken without any apparent ill effects.

More recently Harris and Moore have made similar observations. It has been their experience that irradiated ergosterol fed as 0.00001 per cent of the diet will protect their rats from rickets. When the irradiated ergosterol is increased to 0.1 per cent of the diet, one hundred thousand times the minimal protective dose, there is an immediate and rapid loss of weight, calcium is deposited in the tissues in enormous quantities, and death follows quickly. Intermediate doses are followed by proportionate effects. With irradiated ergosterol at 0.025 per cent of the diet, the animals fail to grow but do not actually lose weight, and there is a considerable lengthening of the period before the animal finally succumbs. At 0.001 per cent, growth is not

quite so good as at 0.00001 per cent, but there are no symptoms of poisoning.

Influence of Age of Animal.—Harris and his associates, unlike the majority of workers in this field, have with a few exceptions used young and growing animals (rats and rabbits) instead of adults. Invariably the same pathologic changes have been seen in the young animals as were reported in the older ones. In the few instances in which Harris and his colleagues have themselves used older animals, the only difference in reaction which could be noticed was a difference in time, the older animals being more resistant and surviving for a longer time than the younger ones.

Possibilities of Recovery.—If the excessive doses of irradiated ergosterol are discontinued, the animals usually make a rapid and complete recovery. Appetite is regained, growth at the normal weight is resumed, and the abnormal calcium deposits very largely disappear.

Vitamin D Versus By-Products of Irradiation as the Cause of Toxic Effects.—Toxic effects similar to those produced by irradiated ergosterol have sometimes been observed when very large doses of irradiated food, especially milk, have been fed to animals, and the suggestion has been made that the toxicity might be due not to vitamin D but to nitrites or other substances developed as by-products of the irradiation (Reyher and Walkhoff).

As evidence against this theory, Harris and his associates submit first of all the fact that no matter how a sample of ergosterol may be irradiated, whether dry, in an atmosphere of nitrogen in a quartz flask, or in solution in alcohol or in oil, it still exhibits the same toxic properties when given in excess. At the International Physiological Congress in the summer of 1929, Bills reported marked differences in potency, depending on the solvent in which the ergosterol is dissolved for irradiation. The differences in toxicity observed by other investigators may therefore be due to variations in potency of the irradiated ergosterol rather than to any by-products which might be formed.

Further and more convincing evidence that it is the vitamin D itself that is dangerous is the fact that overirradiated ergosterol in which practically all of the vitamin has been destroyed no longer produces any undesirable effects. To establish this point, Harris and Moore took some of the same irradiated ergosterol, which they had already shown to be toxic when fed in large doses (0.1 per cent of the diet, or 10 mg. in 10 Gm. of food), and irradiated it for twenty-four hours longer. This overirradiated ergosterol retained only one thousandth of its former vitamin D content, as was definitely proved by tests on rachitic rats, and was entirely harmless when fed again in the same quantities.

It is likewise true that very large doses of cod liver oil, or of its concentrates, will produce some of the results obtained with irradiated ergosterol. For example, Hess reports that excessive amounts of the oil may lead to a loss of inorganic salts from the skeleton and also that the blood calcium of young rats may be raised to abnormally high levels by thirty to forty times the minimal protective dose. "The reason hypercalcemia (abnormally high blood calcium) rarely develops in infants as a result of cod liver oil medication," he writes, "is simply that one cannot give more than about from 6 to 8 teaspoonfuls daily."

It seems very probable, then, that it is the vitamin D itself which is responsible for the harmful effects of the irradiated ergosterol. Apparently, although small quantities of the vitamin are essential for normal calcification, large quantities will stimulate the process to the point where it is fatal to the organism. Harris and Moore have suggested that there are two threshold values for vitamin D, a minimum and a maximum. Below the minimum, there result deficiencies in blood phosphorus or blood calcium (or both), and a consequent deficient calcification: the primary factor is a diminished retention of these two elements. Above the maximum threshold value, on the other hand, there result excessively high blood phosphorus or blood calcium (or both) and a consequent excessive calcification. To some extent, as we have seen, the blood calcium in hypervitaminosis is prevented from reaching too high a level by increased precipitation of calcium deposits and by excretion.

Possible Harm to Children from the Use of Irradiated Ergosterol.—That possible harm might come to children receiving too large doses of vitamin D, as irradiated ergosterol, irradiated food or ultraviolet rays, or a combination of the three, cannot be denied. But it also cannot be too strongly emphasized that all of the doses which have proved fatal to animals have been at least ten thousand times and often one hundred thousand times as large as the amount required to prevent or to cure rickets. Equivalent toxic doses for children have been variously calculated as from 0.1 Gm. to 2 Gm. of irradiated ergosterol.

Actual experience with children indicates that some of them may be more sensitive to irradiated ergosterol than others. Sobel and Claman report that they have in several instances treated rachitic children with as much as 12 mg. daily for twenty days without noting any ill effects. Hess, on the other hand, observed abnormally high blood calcium levels in a number of normal infants and in two rachitic children on considerably smaller doses (2.5 to 5 mg.). Occasionally, also, excessive calcification of the bones was seen in the roentgenograms, but in only two cases were there any other signs of an unsatisfactory state of health. These two children lost weight and developed a moderate degree of fever, a marked drowsiness and a peculiar mental condition. The symptoms disappeared when the ergosterol was stopped but appeared again in one case when the ergosterol treatment was repeated a month later.

In his latest report, Hess states that a high blood calcium is the outstanding sign of the toxic reaction. In infants this is always accompanied and sometimes preceded by a decided failure of appetite, which furnishes the physician with an easily recognizable sign of overdosage. "Hypercalcemia," Hess writes, "may occur in infants when excessive amounts of irradiated ergosterol are given for prophylactic purposes, but rarely comes about in the course of curative treatment, in other words, simultaneously with active rickets or tetany."

The Necessity for Standardization.—The matter of satisfactory dosage for normal and rachitic children is one which still remains to be worked out by the medical practitioner in the clinic. But before he can solve this problem, it is imperative that he be supplied with a standardized product of uniform potency. Hess remarks in an article published in 1928:

> Although not yet available commercially, irradiated ergosterol, under various trade names, has been tested in many clinics both in this country and abroad. It is difficult to appraise the strength of the irradiated ergosterol in these

preparations, owing to the fact that ergosterol itself is by no means a uniform product. This is evident from the gross appearance of the extracts; some are brownish and colloidal in nature, whereas others are white and crystalline.

The standard which has just been adopted by the Wisconsin Alumni Foundation is that the product put out should have one hundred times the potency of good cod liver oil. A preparation is made dissolving the ergosterol before irradiation in arachis oil, in which it is only slightly soluble, and causing the oily solution to flow in exceedingly thin layers into the field of light in the absence of air and ozone. The efficiency of activation is high but the solutions used are so dilute that the activated product requires only slight dilution to reach standard potency. Two drops of the solution is equivalent in vitamin D potency to a teaspoonful of standard cod liver oil.

Viosterol.—The Council on Pharmacy and Chemistry of the American Medical Association has just (Aug. 31, 1929) accepted irradiated ergosterol under the term "viosterol." "Viosterol in oil" designates irradiated ergosterol dissolved in oil. The Council has also provisionally adopted the qualifying phrases 100 D, 5 D, and so on, to designate the vitamin D potency of the various preparations as multiples of the vitamin D potency of good cod liver oil, in accordance with the standard of the Wisconsin Alumni Research Foundation.

The daily prophylactic dose for the average infant and child of this viosterol in oil 100 D is given as from 8 to 10 drops (0.1233 to 0.1666 cc., or 2⅔ to 3⅓ minims), and for the premature and rapidly growing infant, 15 drops (0.25 cc., or 5 minims); the daily curative dose is from 15 to 20 drops (0.25 to 0.333 cc., or 5 to 7 minims), and in severe cases and for adults, doses in excess of 20 drops may be given.

Viosterol will therefore henceforth be the accepted name in this country for irradiated ergosterol.

The movement, then, is toward control and standardization rather than abandonment of a product of such very great and generally conceded therapeutic value. Every writer who has observed the toxic effects of large quantities of vitamin D takes pains to point out that he does not wish his work to be interpreted as in any way deprecating the use of irradiated ergosterol in the treatment and prevention of rickets and all would agree with Harris and Moore as they remark, "Toxic effects at such enormous doses should not in any way discourage the rational use of the properly standardized materials at the ascertainable correct physiological levels." It must, however, always be used under the direction of some one thoroughly aware of its potentialities for harm as well as for good.

University of Chicago.

What Constitutes Man.—Man is characterized by a thinking brain balanced upon a spinal column approximately erect, a stereoscopic vision, and a prehensile hand with a large thumb opposing the fingers. When he acquired these characteristics, he became man and the Stone Age appeared shortly thereafter. While man has departed from the humanoid stem since the Oligocene Epoch, yet he still retains certain anthropoid characteristics, such as susceptibility to or immunity from certain diseases, resemblance of hemoglobin crystals and of certain blood tests, uniform division of thirty-two teeth, the extension of the caudal vertebrae into a tail, and such personal characteristics as curiosity, family protection, and courage.—Reasoner, M. A.: Prehistoric and Ancient Disease, *Military Surgeon*, September, 1929.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

CHINIOFON. — Sodium-iodoxyquinolinesulphonate. — A mixture prepared from approximately four parts of 7-iodo-8-hydroxy-quinoline-5-sulphonic acid, containing not less than 26.5 per cent of combined iodine, and 1 part of sodium bicarbonate. After preparation there is generally some chemical reaction, so that the product may contain a small amount of sodium iodohydroxyquinolinesulphonate in addition to the sodium bicarbonate and the uncombined iodohydroxyquinolinesulphonic acid. On dissolving the product in water, 100 parts of chiniofon yield approximately 85 parts of sodium iodohydroxyquinolinesulphonate.

Actions and Uses.—Chiniofon, which is closely similar to preparations introduced under various proprietary names as wound antiseptics, has been found to be of use in the treatment of amebic dysentery. It is claimed that the action of the drug is probably due to its absorption and direct action through the blood stream on the amebas invading the bowel wall. The drug has been reported in some cases to produce diarrhea; but serious toxic effects do not appear to be common.

Dosage.—Orally, for adults, from 0.25 to 1.0 Gm. (4 to 15 grains) in the form of pills, cachets or solution, three times daily; for children, according to age; rectally, 1 to 5 Gm. (15 to 75 grains) freshly dissolved in 200 cc. of water at a temperature not exceeding 44 C. The course of treatment requires from seven to fourteen days. Combined oral and rectal administration has been used in acute cases and in the more serious chronic cases accompanied by obstinate clinical symptoms. It has been pointed out that the iodine content of chiniofon should be considered when chronic endamebiasis is accompanied by thyroid disturbance.

Chiniofon appears as a canary yellow powder with no odor, or only faint odor, and possessing a bitter taste, but leaving later a distinctly sweetish after-taste. It dissolves in water with effervescence due to the reaction of the uncombined sodium bicarbonate and iodohydroxyquinolinesulphonic acid. The sodium salt is soluble in water to the extent of about 4 per cent; is insoluble in alcohol, ether, chloroform and most of the organic solvents. Chiniofon is decomposed at 223 C.; a solution of chiniofon decomposes on boiling. The addition of strong acids changes the color to pale green and liberates free iodohydroxyquinolinesulphonic acid. To 10 cc. of the solution of chiniofon 1 per cent add five drops of ferric chloride solution: a deep emerald green color forms. To 10 cc. of chiniofon solution 1 per cent add 5 cc. of copper sulphate solution: a dense white precipitate forms. Agitate 5 cc. of aqueous solution of chiniofon 1 per cent made slightly acid with diluted hydrochloric acid with 5 cc. of chloroform: no violet color appears in the chloroform (*iodine*). Acidify 5 cc. of a solution of chiniofon 1 per cent with hydrochloric acid, underlay with chloroform, and add one drop of sodium nitrite solution: the chloroform assumes the characteristic iodine color. To 5 cc. of a solution of chiniofon 1 per cent add 1 cc. of diluted nitric acid and 1 cc. of silver nitrate solution: a faint opalescence is apparent.

To about 1.5 Gm. of chiniofon accurately weighed into a small beaker add all at once and with rapid rotation 15 cc. of a solution of 10 cc. diethylamine in 90 cc. of anhydrous methyl alcohol. Decant the solution from the insoluble material onto a small filter moistened with anhydrous methyl alcohol. Collect the clear filtrate and subsequent washings in a porcelain dish of about 200 cc. capacity. Wash the precipitate, beaker, filter and funnel carefully with anhydrous alcohol until no trace of color is imparted to the alcohol. Allow the surplus alcohol to evaporate from the beaker and funnel, add 25 cc. of distilled water to the beaker, pass the solution through the funnel collecting the filtrate in a 250 cc. flask. Wash the beaker and funnel with separate small portions of water until all bicarbonate is dissolved; add to the solution methyl orange and titrate the bicarbonate with tenth-normal acid. The volume of tenth-normal acid used should indicate not less than 18 per cent sodium bicarbonate nor more than 22 per cent sodium bicarbonate.

To about 0.200 Gm. of chiniofon accurately weighed into a 35 cc. nickel crucible, add about 3 Gm. of anhydrous sodium carbonate. Moisten the mixture thoroughly with water, fill the crucible about three-fourths full with anhydrous sodium carbonate and apply the heat of a Bunsen burner. Heat carefully at first to avoid loss and finally to dull redness for five minutes. Allow the mixture to cool, place the crucible with contents in a 250 cc. beaker and add about 50 cc. of distilled water. When the mass is well disintegrated, pass the solution through a well wetted filter and collect the filtrate in a 500 cc. flask. Wash the crucible, beaker, funnel, etc., well with small portions of distilled water until the filtrate is neutral to litmus paper. Heat the clear filtrate to near 100 C.; add potassium permanganate solution until a permanent purple color remains even after two or three minutes' heating. Add to the hot mixture a few drops of ethyl alcohol to remove the purple color and filter the hot liquid collecting the filtrate in a 500 cc. flask. Wash the precipitate, filter, etc., until the washings are neutral to litmus paper, cool the solution and add sulphuric acid to distinct acid reaction, taking care to avoid loss from effervescence. To the acid liquid add a solution of 2 Gm. of potassium iodide, free from iodate, and titrate the liberated iodine with tenth-normal sodium thiosulphate solution. The volume of tenth-normal sodium thiosulphate used should indicate not less than 26.5 per cent iodine, nor more than 28.9 per cent iodine.

BACILLUS ACIDOPHILUS CULTURE-HOLLISTER-STIER.—A pure culture of *B. acidophilus* in bottles, each containing 200 cc. It contains not less than 150 million viable organisms (*B. acidophilus*) per cubic centimeter at the time of issue.

Actions and Uses.—See Lactic Acid-Producing Organisms and Preparations (New and Nonofficial Remedies, 1929, p. 220).

Dosage.—From 15 to 30 cc. in milk or water to which has been added a suitable quantity of lactose, three times daily. Each bottle bears an expiration date.

Manufactured by the Hollister-Stier Laboratories, Spokane, Wash. No U. S. patent or trademark.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

W. A. PUCKNER, Secretary.

BOROCAINE NOT ACCEPTABLE FOR N. N. R.

Under the proprietary, nondescriptive name "Borocaine," Sharp & Dohme, Baltimore, market procaine borate, the boric acid salt of the base procaine. The firm manufactures the product under license from British Drug Houses Limited, London. The product was placed on the market on the basis of work published by Copeland and Notton, who adopted the name borocaine to designate the borates of various anesthetic bases with which they experimented and who, according to Sharp & Dohme, gave their approval to the British Drug Houses to manufacture procaine borate under the title borocaine.

The application of new trade names to substances that are already known and described under another name is generally undesirable; on the one hand, it tends to create unjustified and unfair monopolies; and what is even more serious, the multiplication of names tends to create confusion which is wasteful and which may be dangerous. Not all physicians realize that they are prescribing barbital (veronal) and amidopyrine (pyramidon) when they call for "Veramon" or "Peralga"; or that Tolysin is neocinchophen and Bismogenol a bismuth salicylate preparation. Practically all physicians are familiar with procaine (or novocain); they know its advantages and limitations, its safety and its risk; the benefit of all this knowledge and experience is lost to them if they fail to recognize the old drug under the new name of "Borocaine."

These difficulties are not so serious in the case of substances that are entirely new or that at least have not been used before in medicine; in such cases the Council accepts the name applied by the discoverer of the substance or of the therapeutic action, provided this is really novel and materially important, and provided the name is not otherwise objectionable. The introducers of procaine borate, however, do not appear entitled to this privilege of discovery, for the substance and its action had been previously described. As to the substance, the A. M. A. Chemical Laboratory examined the product marketed as Borocaine and reported that it was the borate of the base procaine—that is, procaine borate—having the formula $C_{13}H_{20}O_2N_2.5\ HBO_2$. From a study of the literature, the Laboratory concluded that the procaine borate studied by Copeland and Notton agreed essentially in composition with the procaine borate prepared and described in 1910 by Einhorn and Uhlfelder (*Annalen d. Chemie* **371**:131). As to the action, the work of Copeland and Notton is a confirmation of the studies of O. Gros (1910), Laewen (1910 and 1912), Sollmann (1918) and others who developed the fact that the addition of sodium bicarbonate increases the efficiency of local anesthetics when applied locally or injected into nerve trunks and probably for subdural injection and application to mucous surfaces. While Sollmann suggested the use of a solution of the anesthetic mixed with an equal volume of 0.5 per cent sodium bicarbonate solution, Copeland and Notton experimented with the borates of several local anesthetics which because of their slight ionization and high degree of hydrolysis are slowly absorbed and therefore act efficiently at the site of application. Previous to this Gros pointed out that experiments with the borate, bicarbonate, secondary phosphate, acetate and chloride of novocaine showed their narcotizing power to decrease in the order given. This is further confirmation of Gros's theory that the salt of an anesthetic acts more quickly and longer, the greater its hydrolysis in solution.

Since procaine borate was described in the literature in 1910, the Council could not recognize the name Borocaine under which it is marketed in the United States by Sharp & Dohme on the score of novelty. Since neither Sharp & Dohme, the British Drug Houses nor Copeland and Notton discovered the therapeutic value of procaine or even the properties of procaine when contained in a solution in which ionization of the procaine salt does not occur, the Council could not recognize the name Borocaine under the clause which permits the recognition of a proprietary name for a previously known substance discovered to have therapeutic value. The Council considers it of the utmost importance that salts and preparations of procaine be marketed under descriptive names.

The Council declared "Borocaine" unacceptable for New and Nonofficial Remedies because the application of a proprietary name to procaine borate is considered not to be in the interest of rational therapy.

CASCARA-AGAR NOT ACCEPTABLE FOR N. N. R.

Under the name "Cascara-Agar," the Reinschild Chemical Company markets a preparation stated to contain "15 per cent of a watery percolation of two-year-old cascara bark, which is processed into No. 1 Agar, cut to size" and is recommended for use in constipation. It is stated on the trade package that the preparation is: "A harmless vegetable addition to breakfast food. Each teaspoonful contains a mild and specially prepared solution of Cascara Tea." Since these statements do not tell the amount of cascara, the firm was asked to make a plain statement of the constituents of the product, giving the amount of cascara represented by a given quantity of "Cascara-Agar" and the method by which the cascara preparation contained in "Cascara-Agar" is prepared. The firm was further informed that it is misleading to imply that a simple extract of agar is "a specially prepared solution of Cascara Tea."

In regard to the preparation of the product the firm stated: ". . . we debitter two-year-old cascara bark, of specified granulation; the percolation is made with hot water, through the debittered cascara bark, using large quantities of hot water, to extract all possible of the desired property from the bark. To the liquor thus obtained a little licorice extract and sugar are added to cover the remaining slight bitterness of cascara. Into 100 pounds of selected Kobe agar, coarsely cut to size, the liquor obtained by the thorough percolation of 15 pounds of the granulated cascara bark is processed. . . . The saturated agar is then put on sieves of a certain mesh, and dried over steam pipes, until toasted, to make sure that all the water is driven off." In regard to the misleading statement cited, the firm stated that the label of the "Cascara-Agar" trade package would be altered to say that the product contains 15 per cent of a specially prepared percolation of cascara, leaving the word "tea" off.

Since no details were given as to the method used to "debitter" the cascara, one cannot say how much of the active principle of cascara was lost in the process of preparation and therefore cannot judge the amount of cascara in a given quantity of the finished product. Experiments carried out lead to the conclusion that "Cascara-Agar" contains at most only a trace of cascara, and that it is misleading to call the preparation "cascara-agar."

Information was received that the Reinschild Chemical Company still markets "Regulin," a product which has been stated to be prepared in the same manner as is "Cascara-Agar," namely, by the addition of a 15 per cent watery Extract of Cascara, or *virtually Cascara Tea* by special process. An advertisement of "Regulin" appeared in an Atlantic City theater program in 1928. Since the Council does not accept an article under one name if an essentially similar product is marketed by the same firm under another name, this makes "Cascara-Agar" further objectionable.

The Council declared "Cascara-Agar" unacceptable because it is an indefinite mixture marketed under a misleading name with unwarranted therapeutic claims, and because an essentially similar product is marketed by the same firm under another name, thus leading to confusion in the nomenclature of drugs.

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SATURDAY, OCTOBER 26, 1929

THERAPEUTIC EFFICIENCY OF PREPARATIONS OF ARSPHENAMINE

The choice of the preparation of arsphenamine to be used in syphilis, and the most judicious dosage to employ, have had much consideration since the introduction of the remedy by Ehrlich. Schamberg [1] advocates the use of neoarsphenamine as against arsphenamine. Despite the fact that, dose for dose, arsphenamine is more therapeutically active than neoarsphenamine, the latter is definitely preferred throughout the world and is being employed in Europe and in America about ten times as frequently as the former. This is particularly true in Germany, where scarcely any specialist of prominence prefers arsphenamine; in the United States, arsphenamine is still preferred by a small group of prominent dermatologists.

As a result of the simplicity of clinical preparation of neoarsphenamine for use, the more concentrated character of the solution and its milder nature, a good neoarsphenamine is less apt in general to give rise to complications. The chief disadvantage of the use of neoarsphenamine in this country is that there are six or seven brands on the market. The average physician is not in a position to judge the relative therapeutic effect of the different preparations. This has led at times to adverse reports on the effects of the drug. The claims made by detail men are not always substantiated by the facts.

The United States Public Health Service certifies as to the toxicity of various preparations but not as to therapeutic potency. Unfortunately there is considerable variation in different brands. Schamberg believes that therapeutic tests should be made by the United States Public Health Service as they are made in Germany. In that country, before release from the laboratory, every lot of neoarsphenamine must be tested on twelve mice infected with trypanosomiasis. Schamberg is convinced that the great discrepancy in the number of complications and accidents in different clinics is due to the choice of the drug used and even more to the size of the dose given. Meirowsky of the Cologne Salvarsan Commission pointed out some years ago, in discussing encephalitis hemorrhagica, that the larger the dosage of the arsenobenzenes employed the greater was the liability to this and other complications. With the conjoint use of neoarsphenamine and compounds of bismuth or even of mercury, the necessity for the use of larger doses of either no longer exists. The keynote in the treatment of syphilis is the employment of remedies that will produce the maximum therapeutic effect with a minimum of risk to the patient. Schamberg believes that neoarsphenamine should be used in doses never greater than 0.6 Gm., and in most cases less, but always in conjunction with bismuth or mercury compounds. Bismuth has a lower toxicity and a higher therapeutic effect than mercury. As a general statement, 100 mg. of a bismuth compound with 0.45 Gm. of neoarsphenamine should each be given once a week.

Under the regimen that has been outlined, Schamberg states, he has not seen a serious complication in three years in a large hospital service, although he has knowledge that a number of fatalities have occurred in other clinics from the use of larger doses. Moreover, the therapeutic results from more conservative dosage have been just as good as in former days when larger doses of the arsphenamines were used.

1. Schamberg, J. F.: Bismuth and Neoarsphenamine in Syphilis, Arch. Dermat. & Syph. **20**: 431 (Oct.) 1929.

BLOOD GROUP CHARACTERISTICS OF THE NEW-BORN

The history of blood transfusion began with the transfer of the whole blood of some of the lower animals to man, with the aim of conferring on the latter the magic properties of life and of healing which the blood was supposed to possess. Whenever this procedure was not distinctly harmful, as the result, as is now known, of the introduction of foreign protein, it was probably not often beneficial. Perhaps in rare instances some immune substances may have been unknowingly introduced. Later, transfusion became limited to the transfer of blood from one human being to another, under the belief that the blood of the homologous species could not be harmful. Reactions even more severe than those following the use of heterologous blood occurred. These untoward effects received their explanation from the discovery, by Landsteiner in 1901, that the bloods of different human beings may be incompatible through the fact that the serum of the blood of one person may cause agglutination or lysis of the erythrocytes of another. Further work, based on this discovery, soon established that the blood of human beings falls into four groups, whose characters are sharply defined and readily determined, and which are the fixed, inherent and inherited properties of the individual. Simple technical methods for determining the group to which any blood belongs and

the compatibility or incompatibility of any two samples of human blood have made blood transfusion a safe, everyday procedure. The specific group characteristics of human blood have assumed forensic importance in determining the human origin of blood stains and in establishing paternity. The more widespread application of the technic of blood grouping to a constantly increasing number of human beings has brought to light the occasional occurrence of bloods which do not fall sharply into any of the original four classic groups. Such exceptions have led to the assumption of more than the usually accepted two pairs of transmissible characters of human blood and have somewhat diminished the forensic value of blood grouping. Most workers in the field, however, believe that the exceptions are too few to permit the acceptance of more than two pairs of allelomorphic characters, and explain the discrepancies which have been encountered as due to the use of weak test serums. They admit the necessity merely of dividing one of the original groups into two or more subgroups.

Although the necessity for grouping and compatibility tests preliminary to transfusion of blood in adults has been recognized since the discovery of iso-agglutination, similar procedures have been held by many to be unnecessary when transfusion is to be made into young infants. This belief has been based on the view that the blood group characteristics are not established until some time after birth, and that therefore any adult may act as donor to a young infant. It has been urged further that the group of the child is identical with that of the mother, in which case the latter could safely act as donor. The older assumption of the absence of group characteristics at birth and for some time thereafter has been found to be erroneous by more recent and careful examination of larger series of young children. In fifty-eight new-born infants studied by Beljewew and Tschekalin[1] of Kasan, the erythrocytes were found agglutinable in forty (70.7 per cent). In eighty nurslings from 2 weeks to 12 months old, the corpuscles were agglutinated in sixty-six (82.5 per cent). Agglutinability was found by these workers already established in three of seven premature infants of the seventh and eighth months, and by other workers in the fetus. The increase in agglutinability from 41 per cent in the premature to 83 per cent at one year indicates that this factor, although it may be present at birth, is not completely developed in all infants until some time after birth. The figures cited are based on agglutination of the corpuscles alone. It is to be remembered that iso-agglutination depends on the interaction of two factors: one, the agglutinogen or receptor (A, B), a property of the corpuscles, and the other, the agglutinin (a, b), a property of the serum. Distinct differences have been found to exist in the time of development of these two characteristics. Although the agglutinability of the erythrocytes may be already established at birth, the agglutinating power of the serum may not develop until later and it is probably not safe to assume its presence under 2 years of age. Lenart and Biró[2] of Budapest could not detect agglutinin in sixty-four of 100 new-born infants examined by them. These figures cannot be an exact statement of the actual conditions in regard to the presence or absence of agglutinins at birth, since the agglutinin present in some of the children in whom this factor was found to be present at birth probably came from the maternal blood by way of the placenta. Furthermore, the number of children whose blood does not contain agglutinins at birth cannot be a true statement of the number which will develop this property later, since a certain proportion will never develop agglutinins, the absence of this factor being characteristic of one of the normal blood groups. It is evident from the work referred to and from other observations that the property of agglutinability of the erythrocytes appears earlier and is present at birth in a larger number of infants than is the case with the agglutinating power of the serum.

The second reason that has been held to make grouping and compatibility testing unnecessary if the mother is to be used as donor, namely, the group identity of mother and child, also has received consideration in the two investigations mentioned. Lenart and Biró, in their series of a hundred, found the groups of mother and infant to be identical; that is, the pregnancy was homospecific in 51 per cent, and nonidentical, the pregnancy being heterospecific, in 49 per cent. Beljewew and Tschekalin give figures of 53 and 47 per cent, respectively, based on examination of 182 mothers and their equal number of children. The heterospecificity of the blood groups of mother and fetus has been held to be a cause of eclampsia by a number of writers. Lenart and Biró consider the heterospecificity a factor in the causation of icterus neonatorum, believing that the transmission of maternal agglutinins to the child through the placenta may cause an increased formation of bilirubin. They recognize that heterospecificity is not the sole cause of icterus, and give due weight to abnormal permeability of the fetal blood vessels, to the presence of agglutinating substances in the colostrum which are not identical with those of either mother or child (X group of Hara), and to the occasional agglutination of the corpuscles of the new-born infant by the serum of the mother when both belong to group Ab (II) (Bouchet's phenomenon). Icterus of all grades occurred in 63 per cent of the heterospecific pregnancies and in 51 per cent of the homospecific pregnancies. Severe icterus was noted in 43 per cent of the heterospecific pregnancies, as compared with 23 per cent for the homospecific. An observation of some interest in the work of Lenart and Biró is that the five mothers of

1. Beljewew, A. A., and Tschekalin, J. A.: Die Isohämagglutininreaktion bei Kindern im Säuglinsalter, Jahrb. f. Kinderh. **124**: 88 (May) 1929.

2. Lenart, G., and Biró, S.: Die Isoagglutination bei den Neugeborenen und ihre Beziehungen zum Icterus Neonatorum, Jahrb. f. Kinderh. **124**: 77 (May) 1929.

group ABo (I Moss, IV Jansky) had male children. A preponderance of males over females among the offspring of mothers of this group had been previously noted by Hirszfeld and Zborowski, who found twenty-four males in a total of thirty-two children of an equal number of mothers of group ABo.

The results of the study of the characteristics of blood groups of new-born infants have important bearings. First, they indicate the necessity for preliminary grouping and tests of compatibility when transfusion is required for a young infant. The established fact that the group characteristics may not be fully developed until some months after birth necessitates a certain degree of reserve in accepting the results of group determination for the proof of paternity or maternity, when the young infant belongs apparently to the normal group characterized by nonagglutinability of the erythrocytes, group Oab (IV Moss, I Jansky). The nonidentity of blood groups of mother and child may be a factor in the causation of eclampsia, icterus neonatorum, and possibly other abnormal states of mother or child. Finally, the reasons for the appearance of the characteristics and for the difference in the time of appearance of the agglutinogen and the agglutinin factors raise a number of interesting biologic questions.

COMMON SKIN DISEASES

The early reports of the Commission on Medical Education, to which reference has been made in previous issues of THE JOURNAL, have furnished an important reminder that under the usual conditions of private practice about 75 per cent of the office visits are for minor surgery, upper respiratory infections, and general medical and venereal diseases; 90 per cent of the home visits are for infections of the respiratory tract, general medical and contagious diseases, obstetrics and minor surgery. One of the reports indicates further that more than 90 per cent of the illnesses are of types which cannot be controlled on a community basis but are problems of individual patients. Less than 10 per cent are diseases against which public health efforts are mainly directed. This fact is an index of the growing efficiency of public health efforts and also emphasizes the necessity of treating the patient as well as the disease. Such compilations give a reasonably accurate and useful indication of what the demands on the present-day general practitioner are likely to be. They suggest in turn where stress should be laid in the training and equipment of the medical student who is expected to meet these characteristic exigencies of practice. Without question it is of advantage to any physician as well as to his patient to be able to make a satisfactory diagnosis of the less common disorders and successfully meet the emergencies that they present.

With the growth of specialization, however, it has become more and more customary, as well as possible, to refer the problem patients to experts. Nevertheless, unless general medical practice is ultimately to resolve itself into an organization for the allocation of the sick to specialists, it is highly important that every general practitioner should become qualified to meet the commonest of daily situations satisfactorily with respect to diagnosis and to treatment. All too often the "heart patient" requires general medical care rather than, or as well as, the specific ministrations of a skilled cardiologist, and the patient suffering from the ubiquitous common cold may sometimes be managed better by the family physician than by the rhinologist or the laryngologist.

Dermatology represents one of the fields of medicine that seem to receive little serious attention from the general practitioner. It is well to remind him, therefore, that according to statistics collected by Goodman[1] of New York the varieties of cutaneous disorders (aside from the manifestations of syphilis) most commonly encountered belong in comparatively few categories. Eleven groups include nearly three fifths (57 per cent) of all diagnoses for a total of little less than a million patients extending over half a century of recent and modern dermatology. The list of most common diseases has varied little despite recent advances in aids to clinical diagnosis. This means specifically that every practitioner should become familiar with eczema, acne, scabies, psoriasis, seborrhea, impetigo, urticaria, dermatitis venenata, tinea, alopecia, pediculosis and pruritus; these are the common skin diseases that he is most likely to see and to be asked to treat.

Current Comment

DIFFERENTIAL HUMAN FERTILITY

The director of the Hagerstown morbidity studies, by the exercise of forethought, has produced as a kind of by-product to the main research an interesting study of the fertility of women in this "typical" American town.[2] The numbers studied are small, but the accuracy of the observations and the details reported give significance to the results. The proportion of stillbirths and abortions to total pregnancies is higher than is usually recorded in official statistics, doubtless because of the greater care taken in compiling the data. That the abortion rate is higher among poorer people will not occasion surprise. When the gross birth rate is adjusted for age distribution, that for the upper economic group is found to be 89 per thousand married women between 15 and 45, while that for the lower economic group is 174. This marked difference of fertility between the rich and the poor is already well recognized and has been suggestively analyzed by Pearl[3] from the socio-economic point of view. This writer has pointed out that the growth of industry demands an increase of industrial workers in the population and

1. Goodman, Herman: Statistics of the Ten Most Common Skin Diseases, Arch. Dermat. & Syph. **20**: 186 (Aug.) 1929.
2. Sydenstricker, Edgar: Differential Fertility According to Economic Status, Pub. Health Rep. **44**: 2101 (Aug. 30) 1929.
3. Pearl, Raymond: Differential Fertility, Quart. Rev. Biol. **2**: 102 (March) 1927.

that, far from being a cause of alarm, the high fertility of manual laborers should be considered a necessary condition of a continuing balance in the economic structure of the nation. Those who believe that criminal abortion is common among the poor will find no confirmation of their theory from the Hagerstown figures, for the ratio of abortions and stillbirths to live births does not differ significantly from rich to poor. Possibly, in the poorer districts of a large city somewhat different conditions may prevail. In the earliest age group (from 15 to 20 years) the pregnancy rate was found to be as high among the rich as among the poor. The numbers dealt with in this age group are so small, however, that too much significance ought not to be attached to this result.

THE ACTIVITY OF THE SWEAT GLANDS

At the present time sweating plays an inconspicuous part in the management of disease, although the promotion of perspiration was quite common in therapeutic procedures of an earlier generation of physicians. Diaphoretics and sudorifics were employed on the assumption that the skin and the kidneys have a sort of complementary action. Thus, in his popular lectures on the action of medicines, delivered in the nineties of the last century, Sir Lauder Brunton [1] was accustomed to remark that the more water the skin excretes, the less are the kidneys called on to eliminate. "In cases where the kidneys tend to be inactive we supplement their action by increasing that of the skin; in cases of renal disease you frequently use sudorifics in order to remove water from the body." Hot air was regarded as the most rapid sudorific. Cases in which the kidneys secrete little or no urine were generally regarded as "clear indications for the physician to stimulate the skin to action by hot-air baths and pilocarpine, and the alimentary canal by means of fluid-removing purgatives." Subsequent studies of the composition of sweat seemed to indicate that aside from water the quantities of catabolites removed in the secretion of the sweat glands were rather meager. Cutaneous respiration and waste elimination came to be looked on as of minor import, particularly after the important functions in heat regulation came to be better appreciated. Sweating was then assumed to be of particular significance merely with reference to disposal of waste heat from the organism, particularly in times of muscular activity in a warm environment. It is noteworthy, therefore, to learn from the reports of Allen before the thirteenth International Physiological Congress at Boston that dry heat can be used in suitable nephritic cases to produce 4 liters or more of perspiration daily over long periods without the prostration which impaired the usefulness of former methods. The chief nitrogenous constituent of the sweat is urea, which may rise above 1,000 mg. per hundred cubic centimeters. Creatinine has been found to be about 12 mg. Aromatic substances (indican) were not found. The readiness with which urea diffuses in the body makes it clear why this end-product of catabolism is so commonly found in all tissue fluids. Its concentration in the saliva is an index of the content in the blood. According to Allen, the vicarious function of the skin for the kidneys by the dry heat treatment can reduce the blood urea to degrees never before demonstrated, e. g., from 180 mg. to 60 mg.; and in some cases of chronic nephritis this improvement can be long maintained. Symptoms are correspondingly relieved, confirming the conception of uremia as due to retention. The clearing up of edema by the dry heat is still more powerful, perhaps exceeding any other means. Hydremia can also be reduced. Blood pressure is relatively little affected, the rise or fall in short treatments being for the most part slight. Cardiac weakness usually does not contraindicate the treatment, but limits are imposed by the special vascular abnormalities present in many cases of nephritis and hypertension. In severe cases only brief sweating can often be tolerated. It is, indeed, significant to note the renewal of interest in the excretory powers of the skin; there remains to be learned more definitely what the therapeutic indications and limitations actually are.

1. Brunton, T. L.: Lectures on the Action of Medicines, New York, Macmillan Company, 1897.

CULTURES OF LYMPH NODES IN ARTHRITIS

The difficulty of obtaining positive bacteriologic cultures from the articular exudate and from the blood in cases of arthritis is well known. In 1914 it occurred to Rosenow, while he was studying arthritis deformans, to make cultures from lymph nodes that lay in the path of lymphatic drainage from the involved joints. The nodes were excised under local anesthesia and their surface was cleared of any contaminating organisms. Then the nodes were crushed in a tissue press which Rosenow [1] designed and described in THE JOURNAL. Cultures were made from the prepared tissue. His results with this method, reported in this paper and in another article which appeared later in THE JOURNAL, were favorable. In one series of thirty-eight cases of arthritis deformans, he isolated organisms in all but three; [2] in another series, of fifty-four cases,[1] he obtained cultures in forty-seven. In a third series of twelve cases of acute articular rheumatism, he obtained organisms in all. *Streptococcus viridans* was isolated in 40 per cent of the cases in which organisms were obtained in the first series, and in 68 per cent in the second series. Streptococci were isolated in 100 per cent of cases in the third series. After the lapse of fifteen years Paston,[3] using the same type of tissue crusher and a similar technic, has isolated organisms from glands removed from patients with infectious arthritis. She obtained growths from seventy-two of 120 glands, and 93 per cent of the organisms isolated were *Streptococcus viridans*. The similarity between the results of the pioneer work and those of the recent work will be of interest to the many physicians who at present are devoting their attention to the problems of arthritis.

1. Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, J. A. M. A. **63**: 903 (Sept. 12) 1914.
2. Rosenow, E. C.: Etiology of Arthritis Deformans, J. A. M. A. **62**: 1146 (April 11) 1914.
3. Paston, Mary A.: Gland Cultures in Infectious Arthritis, J. A. M. A. **93**: 692 (Aug. 31) 1929.

Association News

MEDICAL BROADCAST FOR THE WEEK

The American Medical Association Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association broadcasts daily at 10 o'clock, Central Standard Time, with the exception of Friday, when the health message is delivered at 9:45, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of October 28-November 2 is as follows:

October 28. "Medical News," by Dr. J. F. Hammond.
October 29. "Phthisiophobia," by Miss Lois Stice.
October 30. "The Eclipse of Magic in Medicine," by Mr. Cecil Bean.
October 31. "Some High Spots in Fifty Years of Medical Progress," by Dr. J. O. Nall.
November 1. "What We Eat and Why," by Dr. R. G. Leland.
November 2. "What We Eat and Why," by Dr. R. G. Leland.

Evening Health Hints from Hygeia, 8 o'Clock, Central Standard Time

October 28. Motor Exhaust Adds Poison to Air.
October 29. Houses Should Be Built for Sun and Air.
October 30. What a Growing Child Needs for Breakfast.
October 31. Points to Remember About First Aid.
November 1. Attribute Tooth Decay to Deficient Diet.
November 2. Babies Learn to See by Seeing.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News.—The tenth annual meeting of Alabama county health officers in Montgomery, October 14, was presided over by the president, Dr. Louis E. Broughton of Andalusia. Following the speech of Governor Graves on the fight the state has made against the hookworm, Dr. Winfield K. Sharp, Jr., Nashville, Tenn., spoke on the fundamentals of county health work. Among other speakers was Dr. Stuart Graves, acting state health officer during the illness of Dr. Douglas L. Cannon, who said in a closing talk that he came to Alabama largely through the influence of the late Dr. Samuel W. Welch, who visualized for him the new era of cooperation between all departments and agencies of the state concerned with the physical and social welfare of the people, especially the coordination of the work of the medical school and the state health department.

DISTRICT OF COLUMBIA

Personal.—Dr. Numa P. G. Adams, dean of Howard University School of Medicine, was guest of honor at a dinner in New York, October 4, given by the Howard Medical Club. The toastmaster was Dr. Peter M. Murray, a trustee of Howard University; among the guests was the president of the university, Mordecai W. Johnson.

Dr. Slosson Is Dead.—Edwin E. Slosson, Ph.D., director of Science Service, died at his home in Washington, October 15, after several months' illness, of heart disease, at the age of 64. Dr. Slosson received his degree from the University of Chicago; was professor of chemistry for about thirteen years at the University of Wyoming; was the author of Creative Chemistry, for years was literary editor of the *Independent*, and was formerly a professor in the School of Journalism at Columbia University.

ILLINOIS

Automobiles Cause Malaria to Reappear.—So many foci of malaria have developed in the central counties of Illinois in the last few months that a greater prevalence may be expected next year, the state health department says, unless control measures are adopted. Madison County reported fifteen cases; Macon, eight, and Sangamon, four, and twelve other counties in the central part of the state reported nineteen cases, making a wide area in which the mosquitoes have become infected. It is said that the contact with the South by automobile has provided ample opportunity to bring the disease back into Illinois. This state has been singularly free from malaria for some time, but the disease once was a veritable plague.

Chicago

Personal.—Dr. Edward L. Jenkinson resigned, September 9, as director of the roentgen-ray department of the Evanston Hospital. Dr. Jenkinson continues to be director of the roentgen-ray department of St. Luke's and St. Joseph's hospitals.

Hospital News—Correction.—Dr. Benjamin H. Breakstone writes that the item concerning him in THE JOURNAL, October 12, page 1151, is erroneous with regard to his ownership of the West End Hospital. A letter by the secretary of the hospital which accompanied Dr. Breakstone's letter stated that there are more than 100 stockholders in the West End Hospital and Training School for Nurses, and that this corporation owns the hospital. Dr. Breakstone writes that the fine of $200 noted in THE JOURNAL was vacated since he does not own the hospital, and that he was not even served with a subpena.

Dr. De Lee Honored.—Invitations have been issued for a dinner at the Drake Hotel, October 28, to celebrate the sixtieth birthday of Dr. Joseph Bolivar De Lee and to present his portrait to Northwestern University. Dr. Irving S. Cutter, dean of the medical school will accept the portrait on behalf of the university. Dr. De Lee graduated from Chicago Medical College which now is Northwestern University Medical School in 1891. After studying in Vienna and Berlin, he became a teacher in his alma mater where, since 1896, he has held the chair of obstetrics. He founded the Chicago Lying-In Hospital and Dispensary in 1895, and has since been the medical director. Dr. De Lee formerly was a councilor of the Chicago Medical Society, secretary of the Illinois State Medical Society, and president of the Chicago Gynecological Society.

Society News.—The Chicago Council of Medical Women will be addressed, November 1, at the Medical and Dental Arts Club by Drs. Anna R. Lapham on "Treatment of Pelvic Dystocias," and Florence E. W. Hark on "Treatment of Rachitic Pelvis."——The Chicago Society of Internal Medicine will be addressed at the City Club, November 25, by Drs. Walter W. Hamburger and Morris W. Lev on "Masked Hyperthyroidism"; Dr. Arno B. Luckhardt on "Some New Observations in the Knee Jerk," and Dr. Géza de Takáts, Dr. I. Nathanson, Frances Hannett and Dorothy Henderson on "Experimental Results of Isolating the Tail of the Pancreas."—The Chicago Medical Society was addressed, October 23, by Dr. Abraham Levinson on hemorrhage of the new-born and Dr. Edward H. Ochsner on fractures of the hip.——The Chicago Medical Society and the Chicago Urological Society held a joint memorial meeting, October 24, for the late Dr. William T. Belfield, at which the first annual William T. Belfield lecture was delivered by Dr. Gustav Kolischer. This lecture had been planned by the urological society before Dr. Belfield's last illness and it had been hoped that he would be able to attend the first lecture.

MARYLAND

Hospital News.—The hospitals of Baltimore are now using nonexplosive roentgen-ray films. In the budget approved by the supervisors of city charities of Baltimore is a request for fifteen additional nurses at the Baltimore city hospitals. At present there is only one nurse in these hospitals for every twenty-five patients in the wards for chronic diseases.——The campaign to raise $500,000 for three new buildings at the West Baltimore General Hospital closed, October 7. One of the new structures is to be a $225,000 maternity unit.

Memorial to Dr. Howland.—A bas-relief in memory of Dr. John Howland was unveiled, October 17, in the amphitheater of the Harriet Lane Home for Invalid Children of Johns Hopkins Hospital, Baltimore. Dr. Howland, before his death in London, in 1926, was director of the home for fourteen years and the head of the department of pediatrics at Johns Hopkins University School of Medicine. Joseph S. Ames, LL.D., the president of the university, Dr. William S. Thayer, Past President of the American Medical Association, Mr. Charles H. Baetjer, president of the board of managers of the Harriet Lane Home, and Dr. Edward A. Park, who succeeded Dr. Howland, were the speakers. The bas-relief of stained marble has a likeness of Dr. Howland in the center, and that of a child on each side.

Ophthalmologic Institute Dedicated. — Ophthalmologists from European and American centers attended the dedication at Johns Hopkins University School of Medicine, Baltimore, October 15-16, of the Wilmer Ophthalmological Institute, marking the culmination of efforts of former patients and friends of Dr. William H. Wilmer, extending over several years, to create and place under his direction a well equipped center for the study and treatment of eye disease. Credit for the proposal of the institute is given to the wife of the assistant secretary of war in the Wilson administration, Mrs. Henry Breckinridge. In 1922, the William Holland Wilmer Foundation was incorporated to establish and endow the institution and in 1925 the General Education Board gave $1,500,000 toward a $3,000,000 fund for this purpose. Temporary quarters with forty beds and limited laboratories were then provided in the Johns Hopkins Hospital and work on the building illustrated here was soon undertaken. Dr. Wilmer in person incorporated in the plans of the building the advantages noted in clinics in this country and abroad. Actual construction started in July, 1927, and the building was completed about a year and a half later. The Wilmer Ophthalmological Institute now serves as the eye clinic of Johns Hopkins Hospital and the department of ophthalmology of Johns Hopkins University. Its work comprises teaching, the care of patients and research. Associated with the institute on a part-time university basis is a large staff of practicing ophthalmologists who are accorded the privilege of having their patients admitted. The building harmonizes with the architecture of Johns Hopkins Hospital, with which it is connected. The administrative offices, main lecture room, photographic and artists' rooms, library and radium laboratory are on the first floor. The second floor has private rooms and cubicles. The third floor wards provide for forty-

seven beds and the fourth floor for the clinical and research laboratory, Dr. Wilmer's special laboratory, operating rooms and the main supply room. On the top floor are more laboratories and wards for experimental animals. There are seventy-two beds for patients, a number which already is proving insufficient. The institute has been planned and the policies have been outlined to make it a gradually expanding source for the direction of ophthalmologic thought in America. Its director, the physician in whose honor it was named, practiced ophthalmology in Washington, D. C., for many years. Gifts totaling $60,000 to found research fellowships were announced and an endeavor will be made to obtain funds for more fellowships. The gifts were from the secretary of the treasury, Andrew W. Mellon, and his brother, Richard, and from Adolph Lewisohn, New York.

MASSACHUSETTS

Boston Builds Sixth Health Unit.—The construction of Boston's sixth health unit is under way. The George R. White Fund, which has provided the other units, awarded the contract. The outlay, including the land, will exceed $500,000. The three story brick and granite building will be at Blossom and Parkman streets, in the West End. On the second floor will be an auditorium seating 200. On the third floor will be a glass enclosed area for conducting health classes in winter, with a kitchen nearby to prepare luncheons for children. In another part of the building will be a cafeteria. There will be complete radiography service, administrative offices and back of the waiting room, infant, prenatal and tuberculosis clinics. The health units are local headquarters for activities of the city health department which operates them and for activities of some social agencies. They are erected by the George Robert White Fund, but are maintained and operated by the city of Boston (THE JOURNAL, July 23, 1927, p. 298).

Society News. — The Middlesex South District Medical Society will be addressed, October 29, by Dr. Chevalier Jackson, Philadelphia, on "Bronchoscopy as an Aid to the Internist and Surgeon in the Diagnosis and Treatment of Diseases of the Lung."——Dr. Harry C. Solomon, Boston, gave a moving picture demonstration of the effect of the inhalation of carbon dioxide in certain neuropsychiatric conditions before the New England Society of Psychiatry, October 8, at Danvers.——The Essex North District Medical Society held a clinic at North Reading State Sanatorium, October 16, in conjunction with the Middlesex North, Middlesex East and Essex South district societies. After inspecting the sanatorium, Drs. Carl C. MacCorison and Earle C. Willoughby with other members of the staff conducted the clinic. Dr. Thomas J. O'Brien, assistant to the president of the Massachusetts Medical Society, spoke on the society's affairs, and Dr. Clarence A. Bonner, superintendent of the Danvers State Hospital, on "Early Diagnostic Points in the Commoner Mental Diseases of Value to the General Practitioner."——The Massachusetts Dietetic Association will be addressed at the Women's Republican Club, 46 Beacon Street, Boston, November 12, by a representative of the Harvard Infantile Paralysis Commission on "Findings After Ten Years' Research in Poliomyelitis."

Mental Hygiene News.—A habit clinic was opened at the Norwood Hospital, October 11, under the auspices of the state department of mental hygiene. The clinic will be held Friday mornings. The staff comprises Dr. Rose C. Munro, a psychiatrist; Miss Helen Bogardus, psychologist, and Mrs. Gertrude Fisher, a psychiatric social worker. Cases for study from Norwood and adjacent towns should be referred to the chief social worker, room 106, State House, Boston.——The Brookline Friendly Society started a mental hygiene project, October 1, hoping to demonstrate to the community the value of mental hygiene in bringing about the adjustment of personality problems. Mrs. Margaret K. Osgood, who for eighteen months has been with the Institute of Juvenile Research in Chicago, has been employed to work with both the community health center and the family welfare department of the society by advising the nurses and consulting with the social workers.—— The Judge Baker Foundation and the Massachusetts Civic League are giving a course on "The Behavior of Youth" at Ford Hall from October 16 to November 20.——The Massachusetts Society for Mental Hygiene will broadcast over Station WEEI on alternate Monday afternoons at 2:30. The talk on November 4 will be by Dr. Olive A. Cooper, assistant director, state division of mental hygiene, on "Mental Hygiene of the Preschool Child." The society will hold its annual meeting at the Twentieth Century Club, 3 Joy Street, Boston, November 13.

MICHIGAN

Society News. — The Detroit branch of the American Urological Society will meet, October 31, at the Receiving Hospital; November 28 at St. Mary's Hospital, and January 9 at the Harper Hospital, where clinics and papers will be presented.——The Wayne County Medical Society devoted its October 15 meeting to a discussion of "The Doctor's Investments."

Michigan Manufactures Toxin-Antitoxin. — Since the devastating outbreak of diphtheria in 1921, Michigan has accomplished much to prevent a similar occurrence. The state has been manufacturing and distributing toxin-antitoxin free of charge since 1922. It has endeavored to determine the number of nonimmune persons in each county while local organizations have carried on immunization campaigns. Last year, there were twenty-seven counties in Michigan which did not have a single death from diphtheria during the year.

British Insignia Presented to Dr. McLean.—In recognition of his service to wounded British soldiers during the World War, the British consul at Detroit presented the colors and insignia of the Royal Army Medical Corps to Dr. Angus McLean at a gathering of several hundred physicians and other friends at the Beach Grove Country Club, October 2. Judge Murphy of Detroit was toastmaster. Mr. E. C. Gott, member of the Canadian Parliament, gave an address; speeches were made by the Italian and Polish consuls, and Dr. Rolland Parmeter, who represented base hospital number 17, which Dr. McLean organized at Harper Hospital for service abroad.

Reciprocity with Meharry Medical College.—The State Board of Medical Examiners of Michigan unanimously voted, October 9, to place Meharry Medical College, Nashville, Tenn., an institution for the training of colored physicians, on the same basis as far as reciprocity is concerned as any other medical college of class A standing, and made this rule retroactive to 1923, in which year Meharry was first given class A rating by the American Medical Association. In this connection, the highest general average given by the National Board of Medical Examiners in its part II examination recently

was made by Dr. Henry E. Hampton, a graduate of Meharry Medical College of the class of 1928.

Personal.—Dr. Rollin H. Stevens has been nominated chairman of the local committee of arrangements for the annual session of the American Medical Association in Detroit, June 23-27.——Dr. John B. Jackson has been elected president of the staff of Bronson Hospital, Kalamazoo, for the eighth year. ——Dr. Guy L. Connor has resigned as secretary of the state board of registration in medicine, effective October 7, and Dr. Fred C. Warnshuis has been appointed to succeed him. ——On October 10, Governor Green appointed the following members to the state tuberculosis sanatorium commission, with Dr. Guy L. Kiefer, state health commissioner, as chairman: Drs. James Ernest Browne, Howell; Edwin R. Vanderslice, Lansing; Eugene N. Nesbitt, Grand Rapids, and E. J. O'Brien, Detroit; Mr. Schuyler L. Marshall, St. Johns, and Mrs. E. D. Stair, Detroit.

Pediatric and Infectious Disease Meeting.—The University of Michigan Pediatric and Infectious Disease Society has arranged a two day meeting, November 8-9, at the University Hospital, Ann Arbor, which will include an open forum on meningococcus meningitis, the rheumatic syndrome, and the rôle of infusions and transfusions in the treatment of diarrhea. The president's address, Friday evening, will be given by Dr. Paul W. Beaven, Rochester, N. Y., on "Infantile Pulmonary Tuberculosis Due to an Unusual Type of Tubercle Bacilli"; Malcolm H. Soule, LL.D., associate professor of bacteriology at the university, will speak on "Bacteriologic Aspects of Bacillus Abortus Infections in Man and Animals." Saturday morning, Dr. William D. Lyon, Akron, Ohio, will speak on "Inhalation of Iodine Vapor in the Treatment of Chronic Laryngitis in Children"; Dr. Gustave F. Weinfeld, Chicago, "Individual Selection of Formulas in Infants," and Philip B. Hadley, Ph.D., associate professor of bacteriology at the university, "Filtrable Forms of Bacteria." The other speakers will be from cities in Michigan. Their topics indicate that the meeting will be of unusual interest.

Four Postgraduate Conferences in October. — Michigan State Medical Society through its councilors arranged postgraduate conferences for October at Alpena, Benton Harbor, Marquette and Houghton. At Alpena, October 23, Drs. Russell L. Mustard, Ann Arbor, spoke on "Management of the Obstructing Prostate and Its Relationship to Surgery," and on "Infections of the Hand," and Heinrich A. Reye, Detroit, on "More Common Neurologic Conditions"; at Benton Harbor, October 16, Dr. Nathan S. Davis III, Chicago, spoke on "Hypertention," "The Decompensated Heart" and "Treatment of Pneumonia"; Dr. Carl D. Camp, Ann Arbor, "Neurologic Examinations" and "The Neuralgias"; Dr. Frederick A. Coller, Ann Arbor, "Differentiation in Acute Abdominal Conditions" and "Mammary Surgery," and Dr. Arthur J. Cramp of the Bureau of Investigation of the American Medical Association on "Fads and Foibles." At Houghton, October 30, in the afternoon, Drs. Richard R. Smith, Grand Rapids, will speak on operations for carcinoma of the breast and management of gynecologic lesions due to childbirth; William S. O'Donnell, Detroit, on "Artificial Feeding of Infants" and "Acute Respiratory Infections," and Richard M. McKean, Detroit, on "Recent Therapeutic Advances" and "Management of Cardiac Diseases."

MONTANA

Typhoid at Helena.—A total of 160 cases of typhoid in Helena was reported to the state board of health between August 21 and October 12, together with eight deaths. Many other cases of illness suspected of being typhoid encountered during the epidemic proved not to be typhoid. The public water supply, October 12, was said to be free from contamination. The Eureka water was shut off, September 26.

NEVADA

State Medical Election.—At the annual meeting of the Nevada State Medical Association, Elko, September 27-28, Dr. William A. Shaw, Elko, was made president; Dr. Robert P. Roantree, Elko, president elect, and Dr. Horace J. Brown, Reno, secretary, reelected. The next annual session will be held at Reno, September 26-27, 1930.

Society News.—Dr. Arthur J. Hood, Reno, was elected president of the Pacific Association of Railway Surgeons at the recent annual meeting in that city.——The Washoe County Medical Society was addressed, September 10, by Dr. John A. Fuller, Jr., on "What the General Practitioner Should Know About the Mouth"; by Dr. Earle L. Creveling on use of the ophthalmoscope, and by Dr. Frederick W. Dershimer, Cleveland, on "Neuropsychiatric Management of Patients."——A new St. Mary's Hospital is being constructed at Reno.

NEW YORK

Society News. — The Seventh District Branch Medical Society, which held its twenty-third annual meeting at Clifton Springs, September 26, was addressed by Drs. Leonard G. Rowntree, Rochester, Minn.; Louis Hamman, Baltimore; Frank A. Kelly, Detroit, and Edward W. Archibald, Montreal.—— Dr. Herman O. Mosenthal addressed the Medical Society of the County of Albany, October 22, on "The Clinical Aspects of Hypertension."

Where Beaumont Started Practice.—A bronze tablet was recently dedicated at Plattsburg marking the site where Dr. William Beaumont of the U. S. Army Medical Corps, the pioneer physiologist, began medical practice in 1815. The tablet was the gift of the New York Department of Education. The Michigan State Medical Society about three years ago dedicated a bronze tablet at Mackinaw Island, marking the site where Beaumont made some of his physiologic discoveries.

Dr. Jewett Honored. — At the annual meeting of the Ontario County Medical Society, Canandaigua, October 8, the guest of honor was Dr. John H. Jewett, who has been a member of the society for fifty years. Dr. Jewett is one of three generations of physicians, each of whom served as president of the Ontario County Medical Society; on this occasion, his son, Dr. Charles Harvey Jewett, Clifton Springs, was toastmaster; in 1883, his father was president of the Medical Society of the State of New York. The guest of honor practiced for twenty-five years in this community without hospital facilities; for the last twenty-five years, he has been chairman of the executive committee of the Thompson Hospital. Dr. Jewett was presented with a late book on roentgen-ray technic. The principal speaker was Dr. James N. Vander Veer of Albany, president of the Medical Society of the State of New York. A three column news item and an editorial in a local paper told of Dr. Jewett's service to the community.

New York City

Commissioner Abolishes Staff—Appoints New One.— Dr. William Schroeder, Jr., commissioner of hospitals, issued an order, October 3, abolishing the staff of the Coney Island Hospital in Brooklyn, which he replaced with a new and larger staff. Several new heads of divisions in the hospital were appointed. Among the chiefs of divisions of the new staff are Drs. Robert F. Barber, surgery; Philip I. Nash, medicine; Harvey B. Matthews, obstetrics; Richard C. Weithas, urology; Judson P. Pendleton, pediatrics; George G. Fisher, ear, nose and throat; Robert M. Rogers, ophthalmology, and Nathan T. Beers, dermatology.

Protest Against Medical Center's Advertising. — The Comitia Minora of the Bronx County Medical Society recently addressed a letter to the dean of the new Columbia University Medical Center, One Hundred and Sixty-Eighth Street and Broadway, protesting against an article which appeared in the New York *Times*, September 15, entitled "Unique Threefold Study of Mental Ills Begun." The letter stated considerable criticism of the article had come to the attention of the county medical society and that it was considered incumbent on them to call attention to its disapproval of this form of advertising. The society recalled that on a previous occasion it had protested against some of the activities of the medical center as being contrary to the best interests of the profession in general and in violation of the high ideals of medical ethics.

Madame Curie Guest of Honor.—A dinner, October 31, will mark the opening of the annual campaign of the New York City Committee of the American Society for the Control of Cancer, and a meeting at the academy of medicine, November 8, will close the campaign. During the week, meetings will be held in churches, settlement houses and high schools. The dinner, at which Madame Curie will be the guest of honor, will be one of three public events at which she will appear during her visit to this country. The meeting at the New York Academy of Medicine will be addressed by Clarence C. Little, LL.D., Dr. Matthias Nicoll, Jr., and Dr. Francis Carter Wood, who will present the Canti Cancer film showing the effect of radium on normal and cancerous tissues.

Poisoning from Polish Used on Table Silver. — This year a group of persons became seriously ill after dining in an upstate hotel and investigations showed that their illness was due to cyanide poisoning caused by "a silver dip" used to clean the table silver. Since then other cases have been traced to the use of the same silver dip. The state health department conducted a careful investigation which established that these illnesses were really due to cyanide in the silver polish. At a recent meeting of the state health council, over which the commissioner of health presided, a resolution was adopted request-

ing the health commissioner of New York City to draft regulations to prohibit the use of silver polish containing cyanide as well as to prohibit its manufacture there for use in other parts of the state.

Midwives Dwindle Under Immigration Restrictions.—An investigation made by the health commissioner indicates that the midwife is gradually passing. Each year witnesses a decrease in the number of midwives and in the proportion of confinements performed by them. The decrease appears to be partly the result of restricting immigration, as only patients of foreign extraction desire the service of a midwife. Twenty years ago 40 per cent of the total births, or 49,616, were reported by midwives; ten years ago the percentage had dropped to 32; five years ago, to 19, and in 1928 to 12, or 15,728 births attended by midwives. Primarily, the decrease is due, the commissioner continues, to the strict requirements enforced by the health department. The majority of licensed midwives conform to the regulations, but there have been several prosecutions by the health department and last year several permits were revoked for abortion and other illegal operations. The department requires that midwives attend only normal labors. If forceps, uterine sounds or syringes, speculums and hypodermic syringes are found in their kits, the result is revocation of the permit. The need for midwives has passed, the commissioner concludes. The people of New York must be encouraged to demand a higher type of service which will mean greater protection to the mothers and babies.

First Official Noise Commission.—The appointment of what is said to be the first official noise commission in the United States has been announced by the city health commissioner. The members are Lewis H. Brown, president of the Johns-Manville Corporation; Charles C. Burlingham, a lawyer; Dr. Arthur B. Duel, an otologist; Harvey Fletcher, Ph.D., a research engineer; Dr. Foster Kennedy, a neurologist; Dr. Samuel J. Kopetzky, an otologist, and Dr. Frederick Tilney, a neurologist. The health commissioner has placed the facilities of the health department at the committee's disposal in an effort to solve the noise problem. In a letter, he suggested among other things that what is needed is (1) a scientific statement of the effect of noise on the human being; (2) a complete classification of noises; (3) a statement as to what can be done under the existing laws for the alleviation of the noise nuisance, and (4) the formulation of reasonable rules for the government of those noise mediums which are subject to our present rules. While some of the best laboratory facilities in the world will be placed at the disposal of the noise commission, no one will expect the commission immediately and completely to eliminate all noise. The fruits of their labor, however, will go far to make New York a healthier and more attractive city, and the whole country will be interested in their work.

Society News.—Dr. Malcolm L. Harris, Chicago, President of the American Medical Association, addressed the Medical Society of the County of Kings, Brooklyn, October 15, on "The Trend of Medicine and the Cost of Being Sick," and Dr. Edward C. Streeter, Harvard University Medical School, Boston, on "Leonardo da Vinci and the Practice of Dissections Among the Florentine Artists." The society is again giving Friday afternoon lectures at McNaughton Auditorium; the November 1 lecture will be by Dr. Edmund B. Piper of the University of Pennsylvania School of Medicine, Philadelphia, on "Some Common Obstetric Problems"; the November 8 lecture by Dr. Nathaniel P. Rathbun, Brooklyn, on "Hematuria," and the November 15 lecture by Dr. Emanuel Libman, New York, on "Diagnostic Studies in Pain." The Medical Society of the County of Kings has classified the hospitals in the county as to the number of physicians on their staffs who are not members of the county medical society. The Methodist Episcopal Hospital heads the list with 100 per cent who are members. At the foot of the list is the United Israel-Zion Hospital, 71 per cent of whose staff are said not to be members of the society. ——The North Bronx Medical Society was addressed, October 10, among others by Dr. Hyman J. Epstein on "Control of Birth versus Birth Control"; Dr. Marie P. Levinson on "The Problem of Contraception," and Dr. Raphael Kurzrok on "The Aschheim-Zondek Test for Pregnancy." —— The Society of Medical Jurisprudence at its three hundred and eighty-third regular meeting, October 14, was addressed by Dr. Perry M. Lichtenstein on "Constitutional Psychopathy and the Law, with Special Reference to the Present School System, Crime, Constitutional Psychopathy and the Necessity for a State Institution for the Constitutional Psychopath."——The section on pediatrics of the New York Academy of Medicine, the Philadelphia Pediatric Society and the New England Pediatric Society met jointly in Boston, October 26. —— The Bronx County Medical Society was addressed, October 16, by Drs. Elliott P. Joslin on "Advances in the Treatment of Diabetes," and William A. Wovschin on "The Basic Idealogy for a New Method of Hay-Fever Prophylaxis and Allied Allergies."—— The American Stomatological Association will be addressed, October 29, at the Columbia University Club, 4 West Forty-Third Street, by Dr. Emil Mayer on "Personal Experiences with Local Anesthesia"; Dr. Henry S. Dunning, "Local Anesthesia in Oral Surgery," and Dr. Harry Neivert, "Gross Anatomy in Relation to Nasal and Oral Surgery."——Columbia University celebrated the one hundred and seventy-fifth anniversary of its founding during the week beginning October 20.

OREGON

Personal.—Dr. Edmund H. Padden, Portland, left for Oakland, Calif., about October 1, to become surgeon for the Boeing School of Aeronautics and flight surgeon for the Pacific Air Transport Company. Dr. Padden is a graduate of the army school of aviation medicine at Brooks Field, San Antonio, Texas.——Dr. Ernest D. Everett addressed the Lake and Klamath County Medical Society, Lakeview, September 4, on tick fever, and Dr. Charles E. Leithead, Lakeview, on the state industrial accident commission and the care of the injured.

PENNSYLVANIA

Society News.—About 300 surgeons of the Pennsylvania Railroad Company left Philadelphia for Norfolk, Va., October 10, for their annual meeting. Among the speakers at the meeting were Drs. William G. Morgan, Washington, D. C., President Elect of the American Medical Association, and John B. Deaver and Henry D. Jump of Philadelphia.

Philadelphia

Naprapath Raul Sentenced.—Cyrus H. Raul's motion for a new trial was dismissed by the court. He was sentenced, October 4, to a fine a $500 and three months in the county jail following conviction in June of practicing medicine without a license (THE JOURNAL, July 20, p. 217). An appeal was made and he was released under $3,000 bail.

Friday Afternoon Lectures. — The Philadelphia County Medical Society is giving a series of twenty-nine seminars, Friday afternoons, at 4 o'clock. Beginning November 1, Dr. George Morris Piersol will speak on "The Medical Society as a Teaching Institution"; November 8, Walter G. Karr, "Basal Metabolism in Diagnosis and Treatment of Disease"; November 15, Dr. Seymour D. Ludlum, "Newer Knowledge of the Principles of Medicine in Relation to Nervous and Constitutional Diseases"; November 22, Samuel G. Pond, "Practical Aspect of Ultraviolet Light," and November 29, Dr. John A. Kolmer, "The Present Status of Chemotherapy in Treatment of Disease."

Society News.—Lectures on the physiology of personality are being given, Thursday evenings, at the medical laboratories of the University of Pennsylvania by Dr. Edward Lodholz. The subject, October 31, will be "Physiologic Basis of Personality"; November 7, "Physiology of 'Desire' and the 'Subconscious'"; November 14, "'Will' from the Physiologic Standpoint"; November 21, "Rôle of the Feelings in Personality."——The Philadelphia County Medical Society will hold an Armistice night celebration, November 13; Surgeon Generals Merritte W. Ireland of the U. S. Army, Charles E. Riggs of the U. S. Navy, and Hugh S. Cumming of the U. S. Public Health Service will be among the speakers.——The one hundredth anniversary of the birth of Dr. S. Weir Mitchell will be commemorated, November 6, in Mitchell Hall at the College of Physicians of Philadelphia by an address by Dr. Frederick Tilney, New York, on "Structural Basis of Behaviorism."

Dr. Jackson Resigns Chair at Jefferson.—Dr. Chevalier Jackson has resigned his chair at Jefferson Medical College and has accepted the professorship of bronchoscopy and esophagoscopy at Temple University School of Medicine where a research department will be organized in the new $1,500,000 building which is now being constructed across from the Samaritan Hospital. Other additions to the faculty at Temple University School of Medicine are Alfred E. Livingston, Ph.D., formerly assistant professor of pharmacology at the University of Pennsylvania, who has accepted the position of professor of pharmacology, and Dr. Nathaniel W. Winkelman, formerly at the graduate school of medicine, University of Pennsylvania, who will be professor of neurology at Temple. Dr. Matthew S. Ersner, associate professor in otology at the University of Pennsylvania Graduate School of Medicine, has become professor of otology; Dr. William C. Pritchard has become professor of histology and embryology, and Dr. Thomas Klein of the University of Pennsylvania Graduate School of Medicine has

become professor of applied therapeutics. Temple University Medical School has secured the Shriners' Hospital for Crippled Children where students will act as clinical clerks in the dispensaries. Arrangements have been made with the Skin and Cancer Hospital for the instruction of medical students.

TENNESSEE

Health at Knoxville.—Telegraphic reports to the U. S. Department of Commerce from sixty-four cities with a total population of about 29 million, for the week ending October 12, indicate that the highest mortality rate (20.8) was for Knoxville, and that the mortality rate for the group of cities as a whole was 11.2. The mortality rate for Knoxville for the corresponding week last year was 17.9 and for the group of cities, 11.4. The highest infant mortality rate for this week (194) was for Nashville. The annual mortality rate for sixty-three cities for the forty-one weeks of 1929 was 13, as against a rate of 12.8 for the corresponding weeks of 1928. Caution should be used in the interpretation of weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large negro population may tend to increase the death rate.

Society News.—At the eighth annual meeting of the Walnut Log Medical Society at Reelfoot Lake, October 15-16, a symposium on heart disease was presented. Among the speakers were Drs. Drew W. Luten, St. Louis, Neuton S. Stern, Memphis; Hugh J. Morgan, Nashville; Emmet F. Horine, Louisville, and Elsworth S. Smith and Samuel Grant, St. Louis. The membership of this society includes physicians from western Tennessee and western Kentucky.——The East Tennessee Medical Society held a two day meeting, October 17-18, at Lenore City, under the presidency of Dr. William E. Howell, Morristown. Among the speakers were Drs. Sydney R. Miller, Baltimore; Perry Bromberg, Nashville, and Tom R. Barry, Knoxville.——The Memphis and Shelby County Medical Society, Memphis, was addressed by Dr. Henry G. Hill, October 1, on "Autogenous Bone Graft."——Dr. James D. McCord has been elected health officer of Lynchburg.——Dr. Samuel F. Strain, Memphis, has accepted a position on the staff of the Mississippi State Tuberculosis Sanatorium at Sanatorium.——Governor Horton has recommissioned Dr. Edwin W. Cocke as superintendent of the Western State Hospital at Bolivar.

WASHINGTON

Hospital News.—The Clear Lake Hospital, which was destroyed by fire, September 10, had been unoccupied for some time, but was expected to be reopened in the near future.——The new fifty-three bed Clark General Hospital at Vancouver was opened, September 7.—The twenty bed Julius Galland Memorial Hospital at the Spokane Children's Home, a gift of the estate of the late Julius Galland, was dedicated, September 11.

Society News.—The Walla Walla Valley Medical Society was addressed, October 9, by Dr. Roger S. Anderson, Seattle, on "Newer Methods of Treatment of Fractures," and by Dr. Leon L. Goodnow of Aberdeen on "Industrial Injuries and Treatment."——Dr. William C. Speidel, Seattle, addressed the Skagit County Medical Society, Mount Vernon, September 13, on blood transfusion, and Dr. Charles F. Eikenbary, Seattle, on fractures of the elbow.——Dr. G. H. T. Sparling, formerly health officer of King County and of Walla Walla County, has been appointed health officer of Clark County.

WEST VIRGINIA

Official Report of Death Rate.—The U. S. Department of Commerce announces that the death rate for West Virginia was 1,015.5 per hundred thousand of population in 1928. It was 1,001.7 in 1927. The increase was due largely to increased rates for nephritis, cerebral hemorrhage, cancer, heart disease, diabetes mellitus and influenza (which more than doubled), pneumonia and cirrhosis of the liver. Deaths from accidental causes decreased during 1928 as there was a decrease in mining accidents, railroad accidents, machinery accidents and automobile accidents. There were decreased mortality rates also for tuberculosis, whooping cough, enteritis, typhoid and measles. The estimated population of West Virginia in 1928 was 1,724,000.

Society News.—The fall meeting of the Central Tri-State Medical Society (West Virginia, Ohio and Kentucky) at Huntington, September 19, was attended by about 200 physicians. Dr. William F. Marting, Ironton, Ohio, was elected president for this year. Among the speakers were Dr. Leo Buerger, New York, on "Circulatory Disturbances of the Lower Extremities," and Dr. Horton R. Casparis, Nashville, Tenn., on "Treatment of tuberculosis in Children."——Dr. John Francke Fox addressed the Mercer County Medical Society, Bluefield, September 26, on treatment of compound fractures.——Dr. Dean Lewis, surgeon-in-chief, Johns Hopkins Hospital, Baltimore, addressed the Ohio County Medical Society, Wheeling, October 14, on "Surgery of the Spleen."——The Fayette County Medical Society was addressed, October 8, at Oak Hill, by Dr. Emory E. Jones, Mount Hope, on "Uterine Hemorrhage," and Dr. Caspar L. Woodbridge, Montgomery, on "Blood Transfusion in the Septicemias." Both papers were discussed by the members of the society present.——Dr. Gilbert T. Smith, New York, has been appointed assistant superintendent of the state hospital at Huntington. Dr. Smith formerly was assistant superintendent of the Mansfield State Hospital in Connecticut; he has been engaged in state hospital work for about twenty-five years.

GENERAL

Automobiles Kill 752—Rate Rises 12 Per Cent in Year.—In the four weeks ending October 5, in seventy-eight large cities of the United States, automobile accidents caused the death of 752 persons, according to the U. S. Department of Commerce. Since May, 1925, the smallest number of automobile deaths in these seventy-eight cities in a four week period has been 346 for the period ending March 27, 1926, and the highest number for such a period has been 771 deaths for the four weeks ending Dec. 29, 1928. The automobile death rate per hundred thousand of population for the year ending October 5 was 24.9, as against a rate of 22.3 for the year ending Oct. 6, 1928. This was an increase of 12 per cent in these cities in one year.

Fellowship in Pharmaceutic Research.—The Philadelphia College of Pharmacy and Science has established a fellowship in pharmaceutic research which carries with it a stipend of $1,000 and free tuition. Applications are being received from candidates for the year 1930-1931. An especially qualified person might begin work in February, 1930. The fellowship offers an opportunity for research and for studies leading to higher degrees. While appointment is for one college year, a person with unusual ability may be reappointed, thus permitting him to obtain a doctor's degree while holding the fellowship. The new building of the Philadelphia College of Pharmacy and Science has complete equipment for research. Further information may be obtained from the college at Forty-Third Street, Woodland and Kingsessing avenues, Philadelphia.

What Drugs Do You Use—Committee Requests Assistance.—The committee on revision of the Pharmacopeia of the United States has mailed a questionnaire to physicians and pharmacists throughout the country requesting them to indicate thereon to what extent there is a professional demand for medicinal products which were official in the eighth or ninth revisions of the pharmacopeia, but which were not admitted to the tenth revision. The committee requests physicians to mark O, indicating often, R, implying rarely, or N, meaning never, after the items listed. Pharmacists are requested to indicate the number of times these medicinal products have been ordered in their stores. All physicians should cooperate with the committee by answering this questionnaire. The chairman of the committee is E. Fullerton Cook, Ph.M., 636 South Franklin Square, Philadelphia (THE JOURNAL, June 8, p. 1978; September 28, p. 989).

Public Health Service Operates Twenty-Six Hospitals.—The U. S. Marine Hospital under construction at Cleveland is expected to be completed by April. It is being built with funds obtained from the sale of the old hospital property, a part of which remains yet to be sold. The site comprises about 10 acres. In addition to the 250 bed hospital, nine residences for members of the staff are being constructed, a home for fifty nurses, and a building to accommodate about seventy-five other members of the personnel. The U. S. Marine hospitals admit patients who are seamen in the Merchant Marine, persons belonging to the coast guard, the lighthouse service, the coast and geodetic survey and some other government agencies. In noting the progress on this hospital, the Bulletin of the Academy of Medicine of Cleveland says that it is one of twenty-six operated at various ports by the U. S. Public Health Service including the tuberculosis sanatorium at Fort Stanton, New Mexico, and the leprosarium at Carville, La.

Recommendations Not Yet Accepted by Producers of Gauze.—At a conference of manufacturers, distributors and consumers of surgical gauze in New York, in 1928, called by U. S. Department of Commerce to consider the practicability of eliminating unnecessary varieties in widths and lengths, certain recommendations were made and submitted for the approval of the industry. The department of commerce announced, August 10, that while there had been received from hospitals, distributors and manufacturers a large number of acceptances, a

sufficient number of producers' acceptances had not been received to warrant establishment of the specification as a commercial standard. Publication, therefore, will be postponed until a sufficient volume of producers' acceptances has been received. There were no specific objections and the postponement thus made necessary of carrying this project to full fruition appears to be due to the reluctance of a few producers to accept the standard recommended until they have further opportunity to determine the response from the trade (THE JOURNAL, March 24, 1928, p. 922).

Dust Particles Per Cubic Foot of Air.—In the second study by the U. S. Public Health Service of the health of workers in dusty trades, recently published, the conclusion was reached that a maximum of dust exposure of between ten and twenty million particles per cubic foot of air is a desirable limit for dust containing about 35 per cent free silica in the form of quartz. This limit can be reached by the use of economically practicable exhaust ventilating devices. This limit of dust particles does not appear to cause any particular liability to pulmonary tuberculosis, but the establishment of that limit would not prevent the occurrence of silicosis. This study by the public health service presented a definite picture of what happens to men working for many years in dust of the extent described. It appears that they can work for twenty years or more before the liability to tuberculosis becomes manifest. The study showed among other things the close relation between the extent of dust exposure and the health of the men; the large proportion of workers finally succumbing to tuberculosis; the rising sickness and mortality rate from tuberculosis resulting from longer use of the hand-pneumatic tool; the high incidence of sickness of a nature from causes other than tuberculosis, and the failure of workers to recover from their condition in going into nondusty trades.

Influenza Pandemic and Longevity.—The Metropolitan Life Insurance Company has constructed a table to show the effect the epidemic of influenza in 1918 would have on the longevity of the population if it persisted. The table, published in the *Statistical Bulletin*, shows that if the epidemic was a constant situation white males might expect a mean length of life of 47.1 and white females of 50.2 years. The mortality such as existed in 1918 if continued over a series of years, it is said, would have represented a shortening of life by at least nine years as compared with conditions current at that time. The normal expectation of life in 1901 was 48.2 for white males and 51.1 years for white females. The influenza epidemic of 1918 nearly brought about a temporary situation which, measured in this way, was but little worse than the constant situation in the registration states at the beginning of the present century. Pittsburgh is cited as an example of a situation in which as late as 1920 the mean length of life for white males was 47.2, and for white females, 50.5 years, figures practically identical with the corresponding mean length of life computed for the entire registration area in the influenza year of 1918. Summarizing, the bulletin says that we could afford to have constantly with us an epidemic as severe as that of 1918 and yet, as regards mean length of life (the last six words are italicized), we would be practically no worse off than the population of the original registration states actually was from day to day in 1901. This throws light, it is said, on the progress of public health as the effect of the epidemic on mortality was virtually equivalent to a momentary setting back of the clock by about twenty years.

Society News.—At the annual meeting of Delta Omega, the honorary public health society, at Minneapolis, October 2, C. C. Young, Dr.P.H., director of the bureau of laboratories, Michigan State Health Department, was elected president; Dr. John A. Ferrell, Rockefeller Foundation, New York, vice president, and James A. Tobey, Dr.P.H., New York, reelected secretary.——At the forty-second annual meeting of the Medical Society of the Missouri Valley in Iowa City, September 26-28, Dr. Everett D. Plass, Iowa City, was made president; Dr. John O. Skinner, Kansas City, vice president elect, and Dr. Joseph D. McCarthy, Omaha, secretary. The guest speakers were from Chicago, Minneapolis, St. Louis, Omaha and Kansas City. The next meeting will be in Des Moines.——At the annual meeting of the American College of Physical Therapy, Hotel Sherman, Chicago, November 4-7, a joint meeting of the sections will be addressed by Dr. Richard T. Ellison, Philadelphia, on "Sun Cure for Tuberculous Children"; Dr. Archibald P. Evans, New York, "Treatment of Pain in the Arm and Leg"; Dr. Francis H. Redewill, Lieut. Comdr. James E. Potter and Comdr. Harry A. Garrison of the U. S. Navy, neon-mercury cold light as applied by applicators to cavities of the body; Dr. Ursus V. Portmann, Cleveland, "Accuracy in Measurement of X-Ray and Radium Doses"; Dr. Max Thorek, Chicago, "Motion Picture Demonstration of Treatment of Bone Infections," and Albert Bachem, Ph.D., Chicago, "Resistance of Various Tissues for Various Electric Currents."——At the first meeting of the Aero Medical Association of the United States in Detroit, recently, an organization of physicians licensed by the U. S. Department of Commerce to examine pilots, Dr. Louis H. Bauer, medical director of the aeronautic branch of the department of commerce, was made president; Drs. Ralph N. Greene, Jacksonville, Fla., Frederick C. Warnshuis, Grand Rapids, Mich., John R. Poppen, U. S. Navy, Charles H. Gowan, Glendale, Calif., and Harold M. Camp, Monmouth, Ill., vice presidents, and Dr. William B. Smith, Hartford, Conn., secretary.——Dr. Albert J. Chesley, St. Paul, was made president of the American Public Health Association at the annual meeting, October 3, Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, was made president-elect, Dr. Louis Harris, New York, Dr. William J. Bell, Toronto, and Dr. Francis E. Harrington, Minneapolis, vice presidents; Louis I. Dublin, Ph.D., New York, treasurer, and Mr. Homer N. Carver, New York, executive secretary.

FOREIGN

Deaths in Other Countries

Edward Octavius Croft, late professor of obstetrics, University of Leeds, England, recently, aged 70.——**Sir John Campbell,** formerly a member of parliament of northern Ireland and senior surgeon in the Samaritan Hospital for Women at Belfast, August 31, aged 67.

Government Services

Navy Orders

Comdr. Stanley D. Hart to navy hospital, Newport, R. I.; Comdr. Harry E. Jenkins, marine barracks, Quantico, Va.; Comdr. John G. Ziegler, U. S. S. *Nevada;* Lieut. Comdr. Arthur Freeman will continue present duties at the navy yard, Philadelphia; Lieut. Bruce V. Leamer, navy hospital, Great Lakes, Ill.; Comdr. Roy Cuthbertson, U. S. S. *West Virginia;* Comdr. Robert G. Davis, to duty as aide on staff to commander of air squadrons, battle fleet; Lieut. Robert E. Baker, navy hospital, Newport, R. I.; Comdr. Frank H. Haigler, U. S. S. *Lexington;* Lieut. Royal A. McCune had his orders of August 2 modified to report to the U. S. S. *Salinas* on August 31 at Norfolk, Va.; Comdr. Renier J. Straeten, U. S. S. *Mexico;* Lieut. Frederick W. Farrar, navy mine depot, Yorktown; Lieut. LeRoy F. Farrell, navy hospital, Boston. Lieut. Comdr. Charles L. Oliphant has been transferred to the University of Pennsylvania Graduate School of Medicine, Philadelphia, and Lieut. Melville D. Dickinson, Jr., to the navy immunization depot, Fort Mifflin, Pennsylvania; Lieut. Comdr. John H. Korb to the U. S. S. *Lexington* for duty involving flying; Lieut. Comdr. Leonard H. Denny to the navy yard, Washington, D. C.; Lieut. Comdr. Roscoe M. Waterhouse to the navy yard, New York; Comdr. John J. O'Malley to duty at the naval dispensary, Washington, D. C.; Lieut. Comdr. Louis H. Williams to the navy hospital, Boston; Lieut. Comdr. George P. Carr to the bureau of medicine and surgery, Washington, D. C.; Lieut. Robert J. Lawler from Port au Prince, Haiti, to treatment at the navy hospital, New York; Lieut. Comdr. James E. Houghton to the U. S. S. *Omaha,* and Lieut. Comdr. Martin L. Marquette from U. S. S. *Omaha* to continue treatment on the U. S. S. *Relief;* Lieut. Albert W. Stearns' resignation has been accepted, effective October 1; Capt. Eugene J. Grow to command of the Navy Medical Supply Depot, Brooklyn, N. Y.; Lieut. Comdr. Horace V. Cornett to the U. S. S. *Dobbin;* Lieut. Henry D. Hubbard to the navy hospital, Puget Sound, Wash.; Lieut. Leslie O. Stone, resigned, effective October 15; Lieut. Comdr. Herbert L. Shinn to duty with the Garde de Haiti, Port au Prince, Haiti; Lieut. Comdr. Leo C. Thyson to the U. S. S. *Pensacola;* Lieut. Jerome Braun to destroyer squadrons, battle fleet; Lieut. Francis H. Webster to duty with the director general, Public Health Service of Haiti; Lieut. Comdr. Andre E. Lee to marine recruiting station, Seattle; Lieut. Comdr. Guy B. McArthur to duty with the director general, Public Health Service of Haiti; Lieut. Louis E. FitzSimons to navy recruiting station, St. Louis; Lieut. Royal K. Joslin to naval dispensary, Washington, D. C.; Lieut. Edgar L. Olson to the U. S. S. *Henderson;* Comdr. Reginald B. Henry to the U. S. S. *Idaho;* Lieut. Comdr. Harry S. Harding to submarine base, Coco Solo, C. Z.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 28, 1929.

New Maternity Scheme

A committee of physicians, obstetricians and others appointed by the ministry of health to consider the working of the midwives acts, with particular reference to the training of midwives (including its relation to the education of medical students in midwifery) and the conditions under which midwives are employed, has issued its report. The committee believes that any measures directed solely to the better training of midwives and the improvement in the conditions of their employment would not materially contribute to the reduction in maternal mortality and morbidity, unless accompanied by wider measures to deal with this problem on a national basis. These measures include a comprehensive maternity scheme related to national health insurance whereby, while retaining the principle of a cash payment as at present administered, the scope of maternity benefit would be expanded to include essential health services, organized on a local basis and administered in coordination with other services of a similar nature. These services, except as regards *d*, are of general application throughout pregnancy, confinement, and the puerperium, and should, in part, consist of: (*a*) full services of a certified midwife; (*b*) provision for a physician's advice, on the call of the midwife, in abnormality or doubt; (*c*) provision, on the physician's request, of the assistance of an obstetric specialist to deal with exceptional emergencies; (*d*) administrative and financial arrangements for institutional care in certain cases during pregnancy, and for the confinement in a maternity institution of women whose home conditions are unsuitable, of those who by reason of some abnormal condition require institutional treatment, and of those who may elect to be confined in an institution, irrespective of their home conditions and the need for specialized institutional care.

There should be also available the following special medical services: (*a*) an early general medical examination of the expectant mother by the physician; (*b*) a late full obstetric examination by the physician about one or two months before the birth is expected; (*c*) a final systematic examination by the physician after the expiration of, say, six weeks from the date of birth. In connection with the antenatal medical examinations, the physician undertaking the supervision of mothers during pregnancy should not only be conversant with modern antenatal work but have special experience with its methods, and steps should be taken to see that examinations are not perfunctory and that the data obtained thereby are so registered as to be available throughout the progress of the case. There are undoubted advantages in the physician responsible for the antenatal supervision being also the physician who may be on call or in attendance during confinement and the puerperal period. Free choice of physician by the mother for the preliminary examinations, and the right of the mother to be attended both by a physician and by a midwife, even in a normal case, if she so desires, are recommended. The committee favors the introduction, in relation to the ten months comprising the time of pregnancy and lying-in, of a medical general practitioner service comparable to the medical service as at present provided under the national health insurance acts. It urges, further, that the midwife give considerably more attention and time to her patients than has hitherto been accepted as the standard, and that the scope of her duties, particularly during the postnatal period, be extended in certain important respects. To secure this end she must be limited as to the number of cases she may attend and should be entitled to ask for larger fees than she now commands. Though much is commendable in this scheme, it is a further step on the path of medical socialism, and in its working will no doubt show the inherent defects of all socialism, as the insurance acts have.

Traffic Safety: The Layout of Crossroads

The improved system of highways that is gradually being evolved is one of the most notable achievements of this country since the war. The ministry of transport has sent to local authorities a report on the layout of crossroads, junctions and corners, prepared by the Town Planning Institute, in consultation with the officers of the ministry. The minister is in general agreement with the recommendations. The growth of motor traffic, which has not yet approached its maximum in this country, has produced an entirely new set of circumstances. Therefore not only the design of streets but also the methods of land development must be adapted to these circumstances, and brought up to modern requirements by those developing estates and by those responsible for schemes of redevelopment or street improvement. This is necessary not only to avoid congestion of traffic, by which the improvements in mechanical traction are largely stultified, but also for the safety of pedestrians and of motorists. In order to avoid interference with the flow of traffic and minimize the chance of accidents it is desirable that on main traffic routes the number of crossings or road junctions should be reduced to a minimum and should be at least a quarter of a mile apart. Footpath access to the main road can, of course, be provided at more frequent intervals. In order to give a sufficient width of vision for safety of traffic, buildings at the corners of the junctions of all important roads should be set back 125 feet from the point of intersection of the center lines of the respective roads. There should be regulations governing the height of fences and prohibiting the erection or continuation of billboards at corners, and requiring that hedges, trees or shrubs shall not be permitted to grow so as to obscure the view from one road to another. Where roads meet at a junction on a steep gradient, even a low fence or hedge may obscure the view. If necessary, the front fence or hedge should be omitted, or the fence line set back to the line of vision referred to. Except just at junctions, tree-planted grass margins are a most desirable adjunct to a road. They not only secure longer notice being given to a driver before a pedestrian steps into the road, but the pedestrian enjoys the comfort of being farther removed from rapidly passing traffic; also, the amenities and beauty of the road are greatly enhanced. The trees should be planted away from the curb and as near the footpath as possible.

The Survival of the Unfit

In a letter to the *British Medical Journal*, Dr. A. F. Tredgold, the leading authority on mental deficiency, draws a gloomy picture. He says that for the past two generations the nation has been breeding relatively more and more from its dregs and less from its cream. The steady fall in the birth rate has been considerably greater among the more intellectual, capable and socially efficient members than it has among the intellectual dullards, the least capable, and the social inefficients. This can have but one result—gradual deterioration of the nation's fitness and efficiency. But the process of deterioration has been so gradual as to be practically imperceptible during the lifetime of any individual, and this, with the lack of any sufficient statistical evidence, has caused these warnings to pass unheeded. During the past few years, however, evidence has gradually accumulated. The medical inspection of school children shows that at least one sixth are so physically or mentally defective or diseased as to be unable to derive reasonable benefit from the ordinary form of education. Furthermore, there are no fewer than 600,000 backward children in the country, and these add 50,000 recruits to our industrial army every year who are not only unprepared, through mental retardation, to meet effec-

tually the demands of life, but who furnish the bulk of inefficient adults—criminals, paupers, mendicants and unemployables. National health insurance statistics show that in one year the amount of sickness in England and Wales equaled a loss of more than 26½ million weeks' work. The examination of approximately 2½ million men of military age during 1918, considered to be a fair sample of the manhood of the country, showed that only one third could be regarded as perfectly fit and healthy. The recent investigations made by the Joint Mental Deficiency Committee show that, whereas in 1906 the number of mental defectives as ascertained by the royal commission was 4.6 per thousand of population, corresponding to a total of 150,000 in England and Wales, in 1926 they amounted to at least 8 per thousand, equivalent to a total of 314,000. No doubt some of this increase is due to a more complete ascertainment, but it is impossible to avoid the conclusion that the proportion of mental defectives to the general population is greater than it was a generation ago. In view of these figures Dr. Tredgold asks how is it that after fifty years of modern preventive medicine, after the expenditure of many million dollars on health services, and after improvements effected in feeding, housing, conditions of work, and environment generally, all the indications point to a deterioration in the mental and physical health of the nation. His answer is that efforts have been directed solely toward environment and no attention has been paid to the question of inborn qualities, though these are probably far more important. Symptoms are treated and the disease, of which they are merely the manifestation, ignored. As long as this is done, so-called preventive medicine will do no more than lop off a few dead and dying branches from the tree of life. It will certainly fail to improve the vigor of that tree and prevent its deterioration. The Central Association for Mental Welfare and the Royal Medico-Psychological Association have forwarded to the government resolutions pressing for inquiry into the inborn factors which are responsible for ill health and inefficiency, with the means by which their origin and transmission may be prevented.

Bibliographic Conference

The ninth conference of the International Institute of Bibliography has been held in London. Dr. S. C. Bradford reported on the discussions on classification during the recent congress of librarians at Rome. He outlined a scheme of a standard classification for bibliographic agencies, a comprehensive subject index to published scientific papers by which untold useless effort now spent in the repetition of previous work would be saved. Mr. Donker Duyvis reported on the new edition of the manual of the universal decimal classification, of which 1,500 pages has now been printed. For practically every topic of human knowledge a class number is available. The president, Prof. A. F. C. Pollard, gave an address in which he explained that the function of the institute was the economic distribution of means by which the information on any given matter contained in the world's literature might be exhaustively extracted and immediately brought to light. The comparatively small but rapidly increasing literature of science was fed by genius and exceptional intellects, which were in a class by themselves, and by those who labored in association with them. To the former the work of the institute did not universally appeal, but the importance of bibliography to the latter was evident. Many scientists in the vanguard of progress regarded bibliographic research as a waste of time, but the history of science showed over and over again that this was an error. Researches had been repeated without adding anything to knowledge. The history of the theory of the atom, of the development of the microscope and even of the automobile magneto showed wasteful repetitions due to ignorance of what had been achieved. He suggested that the function of the institute might be further developed by establishing daughter societies in every country, which might be controlled from the central body and might collect in the most economical manner and distribute to the student bibliographic references to all literature—a stupendous ideal which might take years to accomplish but which must come in time.

BELGIUM

(From Our Regular Correspondent)

Sept. 24, 1929.

Brussels' Special Medical Week

The ninth session of the Journées médicales, Brussels' special medical week, was a great success. Owing to the participation of numerous scientific societies (Société d'ophtalmologie; Société belge de gynécologie et d'obstétrique; Ligue belge contre le rhumatisme; Société belge de médecine préventive et d'eugénique; Association des dentistes de Belgique) that held their meetings the same week, the number of persons attending the Journées médicales bordered on 2,000. Official delegates from twenty-four foreign countries were present.

At the opening session, Professor Coppez set forth the principal provisions of the new law pertaining to medical instruction. He took up also a number of new problems that are interesting to consider. Would it not be well for young men to specialize in the direction of some profession, while still in college? The heart and the brain could be trained just as well by the study of nature as by the study of fiction—and just as esthetically, possibly. Then, again, after a doctor's degree has been secured, the law provides for the degree of *agrégé* of higher learning, constituting, in its essence, a special doctorate. Why has no provision been made for a specialty diploma? It has been impossible to reach any agreement, and no legal sanction can at present be given to any other specialties than that of hygienist, or doctor of public health. Why is that? It is not a question of lowering the rank of other physicians but of recompensing the efforts of those who have completed their studies in a definite direction. The future will bring about, no doubt, other improvements in medical instruction. The new law marks a distinct advance, and that is the main thing. Let us work to raise the scientific and moral level of the profession.

Numerous communications were presented in the many auditoriums that were called into use.

REPARATIVE SURGERY

Dr. J. Eastman Sheehan of New York pointed out that the opportunities for reparative surgery are very numerous: scars of the face caused by burns, lupus, applications of radium, traumatic and syphilitic deformations of the nose, lesions of the cartilages of the ear, lesions of the eyelids, wounds resulting from extensive diathermocoagulation applied to cancers, facial paralysis. The various forms of technic were demonstrated effectively by a series of colored films.

RADIOTHERAPY IN TUMORS OF DIGESTIVE TRACT

Professor Dustin presented a report on several cases of tumor of the digestive tract subjected to irradiation, which he was able to follow up histologically by means of biopsies frequently repeated. The cases discussed were of patients that were treated by telecurietherapy, which, as shown by histologic examinations, presents a great advantage, for one does not observe necrosis as with radium puncture and radiotherapy applied by means of x-ray apparatus. In a series of slides, Dustin showed the effects of irradiation on the evolution of the tumor. In spinocellular epitheliomas, one sees important changes develop very rapidly. Mitosis becomes more and more atypical and, at the same time, becomes less dense and soon disappears entirely. The size of the cells increases continually, soon assuming considerable proportions. Finally one sees polynuclear infiltration appear, more and more, and breaking up of the tumor begins. The tumors that develop at the expense of a malpighian epithelium may be entirely destroyed by radio-

therapy, provided the treatment is begun sufficiently early and is carried out in an adequate manner. It is quite different with the tumors that develop at the expense of columnar epithelium. In these cases, Mr. Dustin points out that even when the tumor presents histologically few marks of malignity the treatment will fail; that is to say, during the application it may seem that the tumor is arrested in its development; mitosis is much retarded, but as soon as the treatment is interrupted, it is renewed with a vigor and a rapidity greater than before. One is forced to conclude, therefore, with M. Dustin, that at the present time roentgenotherapy and radium therapy are of no aid in the treatment of tumors developing from columnar epithelium.

Nevertheless, the author does not think this sufficient reason for abandoning all attempts in this direction; on the contrary, it is probable, or at least not impossible, that better results may be secured by improving the technic employed. He then showed on the screen a number of cases of cancer of the stomach, which revealed to what extent the anatomy of that organ may be changed. The changes are sometimes of such a nature that it seems impossible that a patient could have lived long enough for such lesions to develop.

VERTEBRAL SCIATICA

Dr. V. Putti of Bologna pointed out that, in addition to true sciatica resulting from neuritis of the sciatic nerve, there are numerous "algias" of the lower limb caused by irritation of the lumbar nerve roots associated with lesions of vertebral arthritis. The treatment of these diseases that proves successful aids in the differential diagnosis of the disorder. While they are resistant to the ordinary treatment for sciatica, they are commonly relieved by the treatment indicated in intervertebral arthritis, which consists in thermotherapy (application of hot air by the Bier method) and in immobilization by means of a removable plaster cast applied in the position in which the patient experiences relief. The cast is retained for intervals of increasing length, depending on the tolerance of the patient. Vertebral sciatica is due to compression of the funiculus by the phenomena of periarthritis complicating the arthritis so frequent in the region of the interlumbar articulations and due to anatomic changes. Only by relieving the arthritis can one cure the "sciatalgia," which is rebellious to other modes of treatment.

SYMPATHETIC OPHTHALMIA

Dr. Morax of Paris considered various aspects of the mysterious disorder termed "sympathetic ophthalmia." In agreement with Elsching, he stated that it is due to a resorption of the uveal pigment, with sensitization of the other eye. Acting on this conception, Woods prepared a pigment antigen, by means of which he established a veritable Bordet-Gengou reaction. Woods obtained also intradermal reactions with uveal pigmentary products. But careful investigation has shown that, while most patients with sympathetic ophthalmia reacted to the blood or to the skin test, there were eyes that presented frankly the characteristics of sympathetic ophthalmia in spite of a negative test. As to the infection theory, it is probably well founded, although the micro-organism or virus is unknown. The disorder has nothing in common with the experimental aspergillosis of Deutschmann; the latter corresponds possibly more to the infection by the herpetic virus of von Szily. Examination of eyes affected by sympathetic ophthalmia reveals the presence of collections of leukocytes throughout the uvea, but especially in the choroid. These collections vary in importance, as was shown by excellent photomicrographs projected on to the screen.

THE NEW BUILDINGS OF THE FACULTY OF MEDICINE IN BRUSSELS

Under the conduct of the professors and their assistants, the attendants at the convention visited the new institutes of the Faculty of Medicine in Brussels. From the basement, where the cadavers are received and prepared for dissection, up to the top story, where is located the well lighted, spacious and airy dissecting room for the students, one must admire the arrangement and equipment of the laboratories, the lecture halls and the adjoining rooms. Embryology, pathologic anatomy and legal medicine all have departments organized and equipped in a most modern manner. Another part of the building contains the library, and the institutes of bacteriology, therapeutics, hygiene, physiology and general pathology. The two lower floors are devoted to medical instruction, which reflects the advanced nature of the scientific researches. All has been done for both the student and the research worker to facilitate their work in every way.

PARIS

(From Our Regular Correspondent)

Sept. 18, 1929.

The Unusual Drouth in France

For the past six weeks, the entire territory of France has been subjected to an unusual hot spell and drouth. While such conditions are not rare in other regions, they are very abnormal here, as this country more than any other in Europe constitutes a temperate zone, in which heat, cold or rain is never excessive. Not since the middle of the last century, the meteorologists tell us, has there been such a year. The morbidity and mortality statistics have registered the inevitable effects of the abnormal conditions. The number of deaths from sunstroke, cerebral or pulmonary congestion and infantile diarrheas has increased greatly. There has not, however, been a genuine epidemic of any kind. Everywhere (but in the rural districts more particularly) large numbers bathed in the rivers to secure relief from the excessive heat, with the result that many deaths by drowning occurred. An energetic campaign was carried on by the press in favor of the use of sweetened condensed milk for the feeding of infants, which was sponsored by Professor Calmette, in preference to fresh milk, as there was no means of assuring perfect sterilization during the extreme heat because of the exceedingly rapid multiplication of bacteria on the farms and the contamination resulting from flies and dust. The drouth brought about a reduction of the supply of drinking water, and as the heat led at the same time to an increased consumption of beverages, there was a high incidence of intestinal infections due to the ingestion of impure water; but on the whole these infections were not serious or of long duration. There was an adequate supply of water in Paris and in the other large cities of France, which stopped at no expense in order to obtain it, but there was a dearth in the small towns and in the seaside resorts. Hotel keepers took advantage of the occasion in many instances to induce travelers and tourists to buy mineral waters, the price of which had been advanced. In many places, tourists found that the special tax on tourists, which has been imposed for the past twenty years in the small summer-resort towns and which is usually motivated by the alleged need of hygienic improvements, has not always been utilized for that purpose but has been employed for the benefit of the native population, a condition of affairs that has long been suspected.

The First-Aid Stations Along the Highways

With the constantly growing number of automobile accidents, which is in relation to the increasing number of cars manufactured by the various factories and sold at continually lower prices, the question of the systematic installation of first-aid stations along all the principal highways of the country has become urgent. Three important routes out of Paris were provided for last year for a radius of about 100 kilometers. This summer, 191 new stations were established along the routes leading from Paris to Calais, Paris to Hâvre, Paris to

Dieppe, Paris to Dunkirk, from Hâvre to Lille, and from Dunkirk to Charleville, along the Belgian frontier. At present, similar installations are being made along the routes from Paris to Metz, Paris to Strasbourg, Paris to Geneva, Paris to Nice, and along the route from Evian to Nice, which runs close to the chain of the Alps, which is becoming an area much frequented by tourists during all seasons. During the height of the tourist season there have been no less than a hundred accidents a day in France, with the fatalities averaging from fifteen to twenty.

The Proposed International Society for the Prevention of Blindness

The League of the Red Cross Societies, the headquarters office of which is in Paris, has recommended, in a report recently published, the creation of an international association for the prevention of blindness. During the past two years, studies have been carried out on the frequency and the principal causes of blindness throughout the entire world, and in a short time a provisional committee, charged with forming a permanent organization, will meet at Scheveningen, Netherlands, under the chairmanship of Professor de Lapersonne, honorary professor at the Faculté de médecine de Paris. It is generally estimated that the number of blind persons in the entire world is around three million. Numerous organizations have been formed to prevent blindness by correcting the grave defects of vision. The principal causes of blindness pointed out in the report are well known diseases, the prevention of which would reduce the number of the blind and the accidents of industrial life, together with traffic accidents. The objectives of the new association are the following: (1) an international research on the direct or indirect causes that may lead to blindness or a weakening of vision; (2) the encouragement and support of all measures calculated to eliminate such causes, and (3) the dissemination of a knowledge of all the facts that serve to protect and to make the best use of vision.

Organization of the Opposition to Social Insurance in France

As the new law pertaining to social insurance goes into effect, April 30, 1930, the medical profession of France has taken up seriously the organization of resistance, which has been formally decided on by the general confederation of medical syndicates. The confederation is encouraged in its stand by the dissatisfaction with the provisions of the law shown by those classes in whose favor the members of parliament devised the law, namely, the workingmen and the agriculturists. The confederation has already decided on two essential combative measures: (1) to exact from all French physicians a promise, based on their word of honor, not to cooperate in the application of the law until it shall have been modified in conformity with the views of the medical profession, and (2) to ask every physician of France, whether a member of a syndicate or not, to make a contribution of at least 100 francs to meet the expenses of the campaign that is being launched. In the region of the Seine, on the initiative of the local syndicate, a *"comité central d'action médicale"* comprising all the physicians, whether members of a syndicate or not, has been constituted. Nineteen groups have already been formed in the region of Paris alone, which are working among the confrères who have hitherto kept aloof from all syndicates and securing the aforementioned promises and the contributions of 100 francs or more. A directorate of five members will be charged with transmitting the decisions of the committee and calling meetings. It is evident, therefore, that a powerful organization is being created such as the medical profession has not known before. For the first time in history, the medical profession, which is usually much divided in opinion and action, forms a solid bloc against the attempts of the public authorities to exploit it in various ways—a bloc that will persist in the future, it is hoped, in case of further attempts to undermine its morale and its financial interests, whether by the creation of medical councils on discipline or an ethical order of physicians, or by the creation of medical tariff schedules or by the establishment of fees for medical care given the beneficiaries of the various social laws passed or to be passed. Only a perfect union of all forces could produce such a result. The government and even the public evince considerable surprise at the energetic action of the medical profession. But the truth is that physicians have simply had the fact forced on them, from contemplation of the workmen's unions, the syndicates of the civil servants, the postal employees and railway employees, the syndicated chambers of merchants, and the like, that in modern society the public authorities respect only organized syndicates and are inclined to tyrannize over isolated individuals deprived of the means of collective defense. The medical profession has been compelled to make the necessary deductions and to follow in their footsteps.

A Medical Study on Love

Dr. Paul Voivenel, who is a popular writer and also a trained psychiatrist, has published a book that, within a few days, realized a sale of 25,000 copies. The title of the book is "La maladie de l'amour," and in it *l'amour* is studied as a veritable disease, with the aid of all the modern laboratory methods. While the idea is not absolutely new, its demonstration takes on a strictly scientific character in that it exploits the present-day theories in regard to the physiologic association of the action of the endocrine glands and the sympathetic system, and with reference to the influence exerted on the latter by purely psychic phenomena, and vice versa. Dr. Voivenel, considering love (*l'amour*) as a pathologic nervous state, distinguishes several forms, as did also the romancer Stendahl. Platonic love, being purely cerebral, is of an imaginative order and is confined to the neurosis. Physical love originates in an excess of a passionate folly and may lead, in its extreme forms, to murder or to suicide. The victims of the first group are "cerebral"; the others are "medullary." Between the two, Voivenel places conjugal love—the least harmful, because satiety leads quickly to recovery. Voivenel considers with all seriousness the sources of stimulation, which are chiefly the eyes, though odor also plays a part, basing his opinions in this respect on the clinical study of certain perversions. Considerations on impotence, psychophysiology, the "critical age" and psychoanalysis follow. Here Voivenel entangles himself somewhat, for he reaches the conclusion that suppression may be just as harmful as the opposite. He takes a final stand, however, on the side of morals and declares in favor of conjugal love, which is the best preparation for friendship, in that it is more pure.

Death of Dr. Capitan

The death of Dr. Capitan, at the age of 74, has been announced. He was professor in the Collège de France and member of the Academy of Medicine. After having been head of the medical clinic at the Hôtel-Dieu in the Germain Sée service, he turned toward prehistoric anthropology and devoted himself to the study of precolumbian races of Central America. A special chair of American anthropology had been created in the Collège de France through the generosity of the duc de Loubat, a Frenchman who became an American citizen, and Professor Capitan was the first occupant of the chair. He carried on also important researches on the early history of Paris. During the digging of a tunnel under the Seine, across the base of the Ile de la Cité, for the passage of a line of the Metropolitan Railway, he discovered in the excavated débris fragments of the piles that composed the stockade that was thrown about the island, eight centuries ago, and noted on the fragments, which were partly carbonized, traces of the burning that dates back to the invasion of the Normans.

BERLIN

(From Our Regular Correspondent)

Sept. 21, 1929.

Pathogenesis and Clinical Aspects of Thrombosis and Embolism

At a recent session of the Leipziger medizinische Gesellschaft, thrombosis and embolism were discussed at considerable length. According to a comprehensive report in the *Deutsche medizinische Wochenschrift*, Professor Hueck, director of the Leipzig Pathologic Institute, considered first the anatomic aspects of the pathogenesis of spontaneous thrombosis and embolism. The accepted results that anatomic research has attained thus far have to do with the composition and structure of the thrombi, and also with the observations of the dissecting room concerning the frequency of thrombosis in association with various diseases, the seat of the thromboses, and their distribution with respect to age and sex. The claim is contested, and the question will doubtless not be settled for some time as to whether or not a knowledge of these facts will justify a conclusion as to the causal factors of thrombosis and embolism. It is advisable to consider, in the usual manner, three factors: the mechanical factor of a modification of the blood stream; injuries to the vascular walls, and changes in the consistency of the blood as revealed in the blood plasma or in the cellular components, or in abnormal admixtures (bacteria, and the like). According to Hueck, investigators have been unable, thus far, to ascribe the process of spontaneous thrombosis to any single physical or chemical factor. The mechanical factor may, to be sure, explain the structure of the thrombus, but it cannot elucidate the real cause, which must be sought rather in the disturbance of the relation of the blood vessel endothelium to the blood plasma. The phenomenon of thrombosis may be regarded more as a passive than as an active event. Whether or not thrombosis is a reactive process can be waived for the present. In the reaction of the vascular endothelium on the blood fluid, one may observe (1) behavior characterized by normal energy — relation of endothelium wound to platelet thrombus (this thrombus remains a local event); (2) behavior characterized by hyperenergy by reason of changed reactivity of the organism—relation of the endothelium wound to the growing thrombus, with danger of embolism, and (3) behavior characterized by anergy—no thrombus in spite of severe injury of the vessel wall. The speaker was unable to advance any plausible explanation as to the cause of the increase, in the Leipzig institute, of cases of thrombosis and embolism.

Professor Payr, director of the Chirurgische Universitätsklinik, stated in his address that the following questions relating to clinical experience and to general practice have arisen: 1. Has there really been any considerable increase in thromboembolism in recent years, beyond what might be accounted for by the usual fluctuations, and if so, since when? What is the proportion of cases with operation and the proportion without? What proportion of the cases are surgical and what proportion belong to internal medicine? 2. If a definite increase can be proved, can acceptable reasons for such an increase be found? What new points of view have been gained? 3. Are there any effective prophylactic measures that can be taken? 4. Are there any new methods of treating (*a*) established thrombosis and (*b*) demonstrated embolism? The histories of the major operations performed in Leipzig during the past nine years (amounting to 30,195) have been collected and compared with those performed in Chemnitz, Heidelberg and Würzburg. An increase in Leipzig can be demonstrated; the increase, however, is not uniform. A much more marked increase has been noted in Chemnitz, and a still greater in Heidelberg—up to twenty-four deaths in a single year. Other manufacturing cities have reported from six to ten fold increases. These are some of the rules for the collection of statistics: (1) only necropsy cases should be considered; (2) only longer periods of nine or ten years should be reported, in order to eliminate all chance fluctuations; (3) cases with and without operation should be reported in two separate classes; (4) age of patients, sex, relative weight, season, associated epidemics, and the nature and the place of the onset of the disorder should be reported; (5) the proportion of the thromboses to the embolisms must be considered.

The constitution and the external influences have been studied as furnishing possibily some explanation for the increased incidence of the condition. Rehn's "habitus embolicus," while not proved, appears to point in the direction of embolism. Diseases of the vascular system without doubt favor the onset of the condition. This makes the institution of an energetic heart therapy all the more imperative. Also patients with internal diseases are subject to embolism. Embolism follows not infrequently simple interventions, but the indications are placed higher, so that patients who are gravely ill must first be made ready for the operation. The average age of patients dying from embolism in Leipzig is 55.6 years. With increasing age, the danger becomes greater. The influence of intravenous treatment is advanced by some, but does not seem plausible. Infection does not play a decisive rôle. Embolism occurs most frequently following laparotomies and interventions on the urinary system; 86 per cent of the cases are associated with the operative area below the diaphragm. Water loss, reduced diaphragmatic respiration, meteorism and intestinal stasis are the precipitating causes. Children are seldom affected by embolism. Women are much more prone to embolism than men are.

The mode of combating pain has no influence, nor has the method of asepsis. Operations lessen the danger. The prophylaxis is mechanical, chemical and biologic, the first being brought about by improvement in the circulation (special apparatus). Meteorism may be combated by breathing exercises. In the presence of varicose veins, special precautionary measures are recommended. Thyroidin, leeches and herudin have been tried, but their prophylactic effect is not established. Intravenous infusion and remedies to strengthen the heart can be recommended. In thrombosis, Payr recommends hot-air applications and mustard plasters twice daily. An alcohol bandage is better than aluminum acetate. Leeches have a favorable subjective and objective effect, but caution is in order, on account of danger from bleeding. Ligation of the efferent venous trunks in manifest thrombosis should often be resorted to; the method may be applied also to the large vessels. In embolism of the lungs, the diagnosis is sometimes difficult, but still more difficult is the decision to apply embolectomy to the pulmonary artery, which operation has been employed nine times with success.

Professor Morawitz, the director of the Innere Universitätsklinik, stated that many authors (Fahr, Oberndorfer, Martini) have reported that the Leipzig cases reveal a considerable increase of thrombosis and embolism associated with internal diseases. About 34,000 case histories dating back to 1912 and 1913 and concerning the period 1926-1928 were studied. Whereas in the first period (1912-1913) about 12 per thousand of all the patients of the clinic presented embolism, the proportion increased during the period 1926-1928 to about 30 per thousand. Fatal embolism of the lungs has increased still more —namely, from 1.3 per thousand to 6.5 per thousand. This enormous increase in thromboses is concerned almost exclusively with disorders of the cardiovascular apparatus, whereas in the other groups of diseases (infections, tuberculosis, tumors) no appreciable increase could be found. What can be the cause for the startling and threatening change? Fahr and others have suggested the now so widespread intravenous therapy. In the Leipzig Clinic, the number of intravenous injections during the period 1926-1928 was twenty times greater than before the war. It goes without saying that a large number of patients who had received intravenous injections were found among the patients with thrombosis. Statistics show, however, that the

number of these patients who have never received an intravenous injection is still much greater than the number of those who have had such injections, and greater than in former years. What factors can then be incriminated to explain the increased incidence of thromboses in cardiovascular disorders? There are two things that may possibly be of importance: 1. Patients with circulatory disorders live nowadays (by reason of improved therapy) longer than formerly. 2. They are "dryer" and less edematous, which is accomplished chiefly by the more general application of modern, very active diuretics. That a certain measure of importance may be attached to the last mentioned factor—namely, the marked withdrawal of water by the administration of salyrgan and similar remedies—is seen from the observations of Schloffer and other surgeons, who have noted a decrease in postoperative thromboses when water is injected rectally, in large quantities.

A more effective prophylaxis and treatment of thrombosis will probably not be possible until the individual factors that lead to the formation of thrombi are better known. Virchow, and later Aschoff, Kroenig and Benecke, ascribed a paramount importance to a retardation of the blood stream. Without wishing to deny the importance of purely mechanical circulatory processes, it must be admitted today that they do not suffice, taken alone, to explain the matter. One can, at most, ascribe to retardation of circulation a predisposing influence. Of more decisive importance are probably changes in the blood and the vessels in their relations to each other (Dietrich, B. Fischer). Unfortunately, however, owing to the lack of suitable research methods, nothing definite is known as to what extent the respective factors are responsible; whether these relationships are disturbed in the same manner in all types of thrombi formation, or whether there are thrombi of varying pathogenic origin. First, a method must be discovered that will enable the examining physician to ascertain whether or not a given blood has a tendency to form thrombi. Jürgens has constructed such an apparatus (thrombometer). Thus, an opportunity appears to be offered to ascertain by a test whether or not the blood of the patient with thrombosis shows an increased tendency to form thrombi, independent of vascular influences. It is, however, quite possible that the key to the problem must be sought in changes of the vascular endothelium rather than in changes of the blood.

As to the prophylaxis and treatment, we cannot rely entirely on mobilization and elevated position (Morawitz). The dynamic factor of retarded blood circulation in resting extremities is probably not so important as was formerly supposed. Morawitz has not found thyroid substance (recommended by the Mayo Clinic for the prevention of postoperative thromboses) effective in checking the progression of thrombi already existing. However, the systematic application of leeches in thrombophlebitis of the lower extremities has given favorable results. The leeches (about half a dozen) are placed at points adjacent to the thrombosed vessel. Repeated applications are indicated. Often a remarkably prompt retrogression of the swelling could be noted. Thus, this old method is again coming into honor. The prophylaxis of thromboses after operations may possibly be effected by the use of herudin and similar substances. To be sure, the high expense involved, the toxic secondary effects, and the transitory nature of the action will prevent any one from conceiving the idea of injecting enough herudin into a person as to make his blood incoagulable. Nevertheless, Jürgens, in confirmation of older experiments of Roskam, has shown that small doses of herudin, though they do not influence the coagulability to an appreciable extent, have a pronounced effect on the bleeding time, which is distinctly lengthened, possibly through their action on the vascular endothelium. Heparin, as prepared by Howell, appears to offer even better prospects, as it is not toxic; but its adaptability to this purpose must be studied more carefully.

Marriages

CLESSON W. RICHARDSON, New York, to DR. MARY E. MCDANIEL of Shanghai, China, at Savannah, Mo., August 27.

JOSEPH PETER SZUKALSKI to DR. LOUISE DOROTHY WAGNER, both of Pasadena, Calif., at Santa Barbara, September 23.

CLAIR EUGENE CARR, Chicago, to Miss Alta Blanch Davidson of Lawrence, Kan., at Evanston, Ill., September 14.

ERLE BULLA CRAVEN, JR., Lexington, N. C., to Miss Jean Lavina Davidson of Los Angeles, at Baltimore, recently.

JESSE LAWRENCE CARR, Palo Alto, Calif., to Miss Louise Hill Barrows of San Francisco, August 29.

MAURICE S. DOAK, Newport, Tenn., to Mrs. Gretchen Lykins of Tunica, Miss., September 26.

LEROY T. HARDENBERGH, Greenwood, N. Y., to Miss Florence Woodburn of Canisteo, August 21.

LYNN E. LANDE, Spokane, Wash., to Miss Caroline Rirsch of Chamberlain, S. D., August 26.

FRANK JENNINGS CORNELIUS to Miss Ella Hestekin, both of Bowman, N. D., October 1.

CORA P. SNYDER to Mr. Clarence E. Crews, both of Robinson, Kan., July 17.

HENRY E. WUNDER, Shakopee, Minn., to Miss Cordelia Pond, August 1.

Deaths

Seth MacCuen Smith ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1884; professor and at one time clinical chief, clinical lecturer and clinical professor of otology at his alma mater; member of the American Academy of Ophthalmology and Oto-Laryngology, the American Laryngological, Rhinological and Otological Society, the American Otological Society and the American College of Surgeons; served during the World War; formerly on the staffs of the Jefferson Hospital, Germantown Hospital, the American Oncologic Hospital, the Memorial Hospital and the Jewish Hospital; author of many monographs on diseases of the ear; aged 66; died, September 14, of chronic myocarditis.

Dean Foster ✠ Stamford, Conn.; Yale University School of Medicine, New Haven, 1899; member of the Medical Society of the State of New York and the American College of Surgeons; aged 59; formerly state senator; on the staffs of the Manhattan Eye and Ear Hospital, New York, the Greenwich (Conn.) Hospital and the Stamford Hospital, where he died, September 16, of heart disease.

Edward Attrill Spilsbury, Miami, Fla.; Trinity Medical College, Toronto, Ont., Canada, 1881; at one time lecturer on laryngology at his alma mater; formerly on the staffs of St. Joseph's Hospital, Yonkers, N. Y., and the Manhattan Eye and Ear Infirmary, New York; aged 74; died, September 2, at the Ontario General Hospital, Kingston, of arteriosclerosis and paralysis.

Stephen Rice Jenkins, Charlottetown, P. E. I.; University of Pennsylvania School of Medicine, Philadelphia, 1884; member of the American College of Surgeons; past president of the Canadian Medical Association; registrar and secretary and past president of the Medical Council of Prince Edward Island; aged 70; died, September 15, of pneumonia.

Henry Lee Morse, Medfield, Mass.; Harvard University Medical School, Boston, 1878; member of the Massachusetts Medical Society; formerly on the staffs of the Massachusetts General Hospital, the Children's Hospital and the Massachusetts Charitable Eye and Ear Infirmary, Boston; aged 76; died, September 7.

Oscar Felix Mercier, Montreal, Que., Canada; Laval University Medical Faculty, Montreal, 1890; professor of clinical surgery, University of Montreal Faculty of Medicine; member of the American College of Surgeons; on the staff of the Notre Dame Hospital; aged 62; died, August 2, of angina pectoris.

Frank Lorne McKinnon, Winnipeg, Man., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1912; member of the American College of Surgeons; served during the World War; aged 50; on the staffs of the Children's Hospital and the Winnipeg General Hospital, where he died, July 16.

John T. Freeland, Bedford, Ind.; Kentucky School of Medicine, Louisville, 1886; member of the Indiana State Medical Association; formerly bank president; aged 69; died in

October, at St. Vincent's Hospital, Indianapolis, of pneumonia, following an operation.

Charles Wilber Nutting, Weed, Calif.; Cooper Medical College, San Francisco, 1912; member of the California Medical Association; past president and secretary of the Siskyou County Medical Society; part owner of the Weed Hospital; aged 45; died, June 1, of pneumonia and influenza.

Elias R. Mason ⊕ Bloomfield, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1905; formerly secretary of the Greene County Medical Society; for three years superintendent of schools; aged 56; died, September 19, of chronic myocarditis and uremia.

Andrew L. Christofferson, Kenosha, Wis.; Marion-Sims College of Medicine, St. Louis, 1898; member of the State Medical Society of Wisconsin; on the staff of the Kenosha Hospital; aged 62; died, September 3, of angina pectoris and myocarditis.

William George Weideman ⊕ Milwaukee; University of Michigan Homeopathic Medical School, Ann Arbor, 1905; Medical Department of the University of Illinois, Chicago, 1905; aged 54; died, in September, at Rochester, Minn., of heart disease.

Walter Gustave Houseal, Newberry, S. C.; University of Maryland School of Medicine, Baltimore, 1886; member of the South Carolina Medical Association; formerly member of the school board; aged 68; died, September 15, of diabetes mellitus.

Paul Kingsley Jackson, San Luis Obispo, Calif.; Cooper Medical College, San Francisco, 1901; member of the California Medical Association; formerly on the staff of the Mountain View Hospital; aged 51; died, July 12, of pulmonary tuberculosis.

Evan Lloyd Patterson, Brookville, Ind.; Cincinnati College of Medicine and Surgery, 1878; formerly member of the state legislature and school board of Brookville; aged 75; died, in September, at the home of his nephew in Indianapolis.

William James Ross ⊕ Clayton, N. Y.; Trinity Medical College, Toronto, Ont., Canada, 1893; served during the World War; aged 59; died, August 7, at the A. Barton Hepburn Hospital, Ogdensburg, of acute lymphatic leukemia.

Oliver Wheeler Boatman, Crab Orchard, Ky.; Keokuk (Iowa) Medical College, 1903; aged 49, died, August 29, at the Danville Hospital, of injuries received when the automobile in which he was driving was struck by a train.

George Hoyle Cowan, Napanee, Ont., Canada; Toronto School of Medicine, 1871; M.R.C.S., England, 1879; for many years medical health officer of Napanee and coroner of Lennox and Addington County; aged 81; died, July 16.

Peter Daniel McCornack ⊕ Spokane, Wash.; Northwestern University Medical School, Chicago, 1900; on the staff of St. Luke's Hospital; aged 55; died, August 26, of cerebral hemorrhage and bronchopneumonia.

William Beebe Monroe ⊕ Monroe, Wis.; Bellevue Hospital Medical College, New York, 1887; health officer of Monroe; on the staff of the Evangelical Deaconess Hospital; aged 67; died, August 26, of heart disease.

Charles Henry Russell, Pullman, Wash.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; member of the Washington State Medical Association; aged 66; died, September 13, of acute dilatation of the heart.

William Waldo Adams ⊕ Moosup, Conn.; Bellevue Hospital Medical College, New York, 1891; aged 60; died, September 17, at the Jane Brown Hospital, Providence, R. I., following an operation for appendicitis.

Asbury Carlton Swimley ⊕ Winchester, Va.; University College of Medicine, Richmond, 1908; also a pharmacist; aged 50; died, August 30, of streptococcus infection of the throat and kidney.

Samuel Feldstein ⊕ Brooklyn; Harvard University Medical School, Boston, 1902; on the staffs of the Kingston Avenue Hospital and the Jewish Hospital; aged 50; died, September 13, of arteriosclerosis.

Charles Huff Swett, Wagner, S. D.; Creighton University School of Medicine, Omaha, 1905; member of the South Dakota State Medical Association; aged 50; died, August 28, of chronic myocarditis.

Lewis Stanhope Brewer ⊕ Quimby, Iowa; State University of Iowa College of Medicine, Iowa City, 1896; aged 58; died, August 12, at Berwick, Pa., as the result of an automobile accident.

Rufus R. Kime ⊕ Orlando, Fla.; University of Michigan Medical School, Ann Arbor, 1880; member of the American College of Surgeons; aged 72; died, August 13, of heart disease.

Frederick Seymour Weingarten ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1907; aged 55; was found dead, September 19, of heart disease.

John H. Shadday, Vevay, Ind.; University of Louisville (Ky.) School of Medicine, 1875; member of the Indiana State Medical Association; aged 76; died, September 6, of myocarditis.

John William Bowling ⊕ Shawneetown, Ill.; College of Physicians and Surgeons, 1887; president of the Gallatin County Medical Society; aged 67; died, September 13, of tuberculosis.

Nathan Sidney Bevins, Long Beach, Calif.; Northwestern University Medical School, Chicago, 1911; served during the World War; aged 42; died, September 5, of chronic myocarditis.

Lorenzo Scott Livingstone, Johnstown, Pa.; Eclectic Medical Institute, Cincinnati, 1891; aged 63; died, September 8, at the Memorial Hospital, of heart disease and pneumonia.

Edward Ernest Bryans, Toronto, Ont., Canada; University of Manitoba Faculty of Medicine, 1909; served during the World War; aged 49; died, July 3, of heart disease.

Luther Edgar Trigg ⊕ Snyder, Texas; Fort Worth School of Medicine, 1909; aged 41; died, July 28, at Los Angeles, of gangrene following an operation for rectal fistula.

Charles Jackson Skelly ⊕ Irwin, Pa.; Jefferson Medical College of Philadelphia, 1889; formerly on the school board of Manor; aged 70; died, August 29, of heart disease.

Isaac Valentine Levi ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1900; aged 52; died, September 11, of coronary occlusion and hemiplegia.

Lexemuel E. George, Long Beach, Calif.; Kentucky School of Medicine, Louisville, 1881; aged 73; died, April 7, of chronic endocarditis, nephritis and arteriosclerosis.

John Franklin Page, San Diego, Calif.; Minnesota Hospital College, Minneapolis, 1884; aged 74; died, April 3, of cerebral hemorrhage and arteriosclerosis.

George Elliott Graham Norton ⊕ New York; New York Homeopathic Medical College and Flower Hospital, New York, 1916; aged 40; was drowned, August 2.

Nathan H. Hornstine ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1904; aged 58; died, September 14, of coronary occlusion and arteriosclerosis.

Frank L. Sargent, Ashtabula, Ohio; Medical Department of Ohio Wesleyan University, Cleveland, 1889; aged 68; died, September 18, of bronchopneumonia.

Edward Carnes Manning, Los Angeles; Hahnemann Medical College and Hospital, Chicago, 1883; aged 78; died, May 25, of acute dilatation of the heart.

John J. Garrett, Rockvale, Tenn.; University of Tennessee College of Medicine, Memphis, 1900; aged 60; was shot and killed by a patient, September 17.

Gilbert Coutant Saunders, Turlock, Calif.; Hahnemann Hospital College of San Francisco, 1894; aged 68; died, March 8, of chronic myocarditis.

Adelbert DeWette Field, Los Angeles; Kentucky School of Medicine, Louisville, 1906; aged 61; died, May 1, of splenomegalia and pernicious anemia.

Francis Field Bryan, Georgetown, Ky.; Bellevue Hospital Medical College, New York, 1880; aged 70; was found dead, September 9, of heart disease.

George Washington Shores, Los Angeles; Louisville (Ky.) Medical College, 1886; aged 69; died, May 23, of myocarditis and diabetes mellitus.

Henry James Caldwell, Wyanet, Ill.; Trinity Medical College, Toronto, Ont., Canada, 1885; aged 73; died, September 19, of myocarditis.

John Fowlston, Kansas City, Mo.; University Medical College of Kansas City, 1904; aged 51; died, September 11, of acute myocarditis.

John Cleveland Millsap, Moultrie, Ga.; Atlanta College of Physicians and Surgeons, 1910; aged 44; died, September 18, of heart disease.

John William Jones, Fresno, Calif.; Vanderbilt University School of Medicine, 1890; aged 68; died, April 25, of myocarditis.

John Henry Cotter ⊕ Poughkeepsie, N. Y.; Albany Medical College, 1878; aged 78; died, September 9, of coronary thrombosis.

John Mack Read, San Francisco; Cooper Medical College, San Francisco, 1887; aged 73; died, September 13, of heart disease.

David Clapper, Mooreland, Ind.; Pulte Medical College, Cincinnati, 1876; aged 81; died, August 29, of arteriosclerosis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DANGERS OF RAPID INTRAVENOUS INJECTION OF DEXTROSE

To the Editor:—Will you be good enough to tell me what the danger is in a rapid (five minute) intravenous injection of 50 cc. of a 25 to 50 per cent glucose solution? Have any fatalities resulted from such an injection? What should be the minimum time for such an injection?

E. A. FLETCHER, M.D., Milwaukee.

ANSWER.—Reactions (chill and rise in temperature) following intravenous injections of dextrose solutions probably do result in certain instances from too rapid injection.

If it is understood that dextrose which is injected more rapidly than it can be utilized by the body is promptly excreted through the kidneys, it will be obvious that overrapid injections serve only a small part of their intended purpose and that the therapeutic effect of the dose is reduced in direct ratio to the excessive speed of injection (Titus, Paul; and Dodds, Paul: An Apparatus for Regulating the Rate of Flow and the Temperature of Intravenous Injections of Dextrose (*d*-Glucose) and Other Solutions, THE JOURNAL, Aug. 18, 1928, p. 471).

In other words, if dextrose solutions cannot be given at their correct rate of injection a certain proportion of the injection may at once be considered as having been uselessly given. Thus the greatest "danger" to the patient would seem to be the loss of expected therapeutic action as well as fruitless exposure to an occasional reaction.

The adult body can utilize only 0.8 Gm. per kilogram of body weight per hour (Wilder, R. M., and Sansum, W. D.: *d*-Glucose Tolerance in Health and Disease, *Arch. Int. Med.* **19**:311 [Feb.] 1917) which, translated into terms of 25 per cent solution, means that this should be given not faster than 3 cc. per minute or the 50 per cent solution at 1.5 cc. per minute to an adult of about 60 Kg. average weight.

Thus at least seventeen minutes should be taken for 50 cc. of 25 per cent solution and twice that time for the same amount of 50 per cent solution.

No fatalities are known to have occurred from this cause (too rapid injection), and if any serious consequences have followed so small an injection even given so rapidly it is probable that the cause should be sought elsewhere (Titus, Paul; and Dodds, Paul: Causes and Prevention of Reactions Following Dextrose Injections, *Am. J. Obst. & Gynec.* **14**:181 [Aug.] 1927).

It is noticeable that in this query the term "glucose" is used. In the reply it was assumed that "dextrose" was meant because this is the term which has been given by the Tenth Revision of the U. S. Pharmacopeia to that dextro-rotatory sugar which is used for therapeutic purposes and which formerly was referred to as glucose. If our correspondent used dextrose U. S. P. for making his preparation or employed one of the many well prepared ampules which are now on the market, the answer which has been given would apply. If he used a commercial glucose such as can be purchased at many drug-stores in dry form or as a thick, gummy syrup the injection of any amount of this at any rate of flow whatever would probably be followed by a reaction of some extent. This would have no particular relation to the rate of injection but rather would be result of impurities in the solution.

CARBON TETRACHLORIDE IN BOMB FIRE EXTINGUISHERS

To the Editor:—I desire to make an inquiry concerning a special use of carbon tetrachloride. This chemical, which has long been used as a means for the purpose of putting out fires, has recently been placed in glass bombs which are released by the melting of a metal seal below a melting point, and, by their falling, break and spill the carbon tetrachloride. A question has arisen whether these bomb fire extinguishers containing carbon tetrachloride will be allowed to be used in sleeping rooms. I desire to make an inquiry whether the vapors of carbon tetrachloride from one of these bombs would have poisonous action on human beings breathing the vapor, other than the known effect of suffocation or lack of oxygen.

VICTOR H. BASSETT, M.D., Savannah, Ga.

ANSWER.—Carbon tetrachloride is toxic in its own right and exerts an action in excess of deprivation of oxygen. Both animal experiments and fatal human experiences attest to the harmful properties of this substance.

The concentrations ranging from 5 to 10 mg. per liter may be breathed for several hours with only minor resulting manifestations, such as sleepiness, loss of mental acuity and headache. When, however, concentration is increased to 80 mg. per liter, complete narcosis supervenes. Death may follow high concentrations in the air, as a result of narcotic action, and may follow reasonably low concentrations from subsequent bronchitis and pneumonia, or necrosis of the liver.

At times the dangers from carbon tetrachloride may be greater than from the fire, for which this substance was used as a repellent. The experience of the U. S. Navy in 1919 exemplifies this danger: One of two navy mechanics, while working deep in the hold of a submarine, had his clothing set on fire by a spark from some electrical equipment. The second workman threw carbon tetrachloride, from a well known fire extinguisher, over his mate's clothing to snuff out the fire. Both men were overcome by the fumes of carbon tetrachloride, both developed pneumonia after being rescued, and both died within nine days.

In confined areas, lacking abundant air supply, the gaseous products of combustion, and of this fire repellent, carbon tetrachloride, may lead to highly lethal gases, including carbon tetrachloride, phosgene, chlorine and carbon monoxide. On this account it is difficult to condone the use of this chemical in sleeping rooms. However well manufactured the articles may be, fortuitous events will in some instances lead to the accidental discharge of carbon tetrachloride, and life may be extinguished rather than fire. These vapors are heavy and thus are of greater danger when persons are in the horizontal position. Intelligent consideration should likewise attend the use of this chemical in any container in offices, public buildings or automobiles. It is far from being a harmless substance.

BLOOD COAGULATION TEST BEFORE TONSILLECTOMY

To the Editor:—Could you give me a blood coagulation test reliable but practical for use by general practitioners as a preliminary before tonsil operation to ascertain safety of operation in any case?

J. G. WALKER, M.D., Attica, Kan.

ANSWER.—Drawing up the blood into fine capillary tubes and then breaking off a piece of the tubing every thirty to sixty seconds in order to see at which point the blood in the tubing clots is a practical method. The microscope test is done with the apparatus of Russell Boggs. A drop of blood from the ear or finger is deposited on the lens of the apparatus and then placed in the microscope; by means of the rubber bulb compressions of air are made and the time noted at which the blood cells are agglutinated. Unless the clotting time is greatly delayed it is of no significance, for the bleeding time is the more important item. Sometimes a patient who has a delayed clotting time will not bleed much at operation, and vice versa.

PAINFUL DYSPNEA

To the Editor:—I have a patient, a woman, aged 23, married, who has intermittent attacks of what seems to be diaphragmatic pleuritis. The pain is severe, with marked dyspnea. On one occasion, one-half grain (0.03 Gm.) of morphine given in two quarter-grain doses at half-hour intervals failed to relieve the pain. It does not respond very well to treatment. What treatment would you advise? Please omit name.

M.D., Michigan.

ANSWER.—Pain simulating diaphragmatic pleurisy may be caused by a number of pathologic conditions, such as renal or gallbladder disease, or tabes dorsalis. In certain cases it may be difficult to make a correct diagnosis, but ordinarily a careful history and physical examination, and a study of the sputum, urine, and roentgenographic evidence will establish the diagnosis. The association of dyspnea suggests a cardiac, renal or pulmonary basis in the present case, although gallbladder colic may also be accompanied by respiratory disturbance. It is manifestly impossible to venture advice as to treatment under the conditions mentioned without first establishing a diagnosis.

HUMAN AND VETERINARY TETANUS ANTITOXIN

To the Editor:—What is the physiologic or chemical difference between human and veterinary tetanus antitoxin? Would the effects be the same in a human being if 1,500 units of veterinary antitoxin was used instead of 1,500 units of human antitoxin? Please omit name.

M.D., Ohio.

ANSWER.—Ordinarily the two products are identical excepting for the label. The effect is precisely the same when 1,500 units of the veterinary preparation is given as it would be if 1,500 units of the human preparation was given.

HIGH BLOOD PRESSURE—INTERNAL SECRETION FROM KIDNEY—SKIN TEST FOR PREGNANCY

To the Editor:—1. A woman, aged 55, has had a systolic and diastolic blood pressure ranging from 240/120 to 200/100 for the past three years. There are no subjective or objective symptoms. The kidneys are apparently normal, as shown by urinalysis and blood chemistry. The Wassermann reaction is negative. Aneurysm is not present. Two days ago a cerebral thrombosis developed with partial paralysis of the left upper and lower extremity. The blood pressure at that time was 234/120. The following day I noticed the following on taking the blood pressure: The first sound came through at 234, continued till 220, then disappeared, and was heard again to come through at 185 mm.; then it continued till the diastolic pressure was obtained. Can you explain this phenomenon and its significance? 2. What are the latest theories concerning an internal secretion of the kidney, and is Arthritin (R. & C.) of any value? 3. What is the value of the skin test for pregnancy with the hormone of the hypophysis? (*a*) Where can it be obtained; that is, what company manufactures it? (*b*) Has the physiology of its action been explained? Kindly omit name.

M.D., New York.

ANSWER.—1. In estimating the blood pressure by the auscultatory method, the sounds heard when the pressure in the cuff is released have been divided into five phases. First, a sharp, clear-cut, systolic tapping sound is heard. As the pressure is released further this is followed by a murmur, of varying quality, designated as the second phase. This murmur may accompany the clear-cut sound of the first phase, especially in the latter part. With a further drop in pressure in the cuff, the murmur is replaced by a reappearance of the sharp tapping sound. In the fourth phase this tapping sound becomes more dull, and in the fifth phase it disappears. In this case the murmur of the second phase was absent. The quality of intensity of all of the sounds depends on many factors, as the caliber of the vessel, its position in the soft tissues, and especially the resonating character of the cuff, which would vary under several conditions. The second phase is supposed to be due to whirls in the blood stream, caused by the blood rushing from the constricted portion of the vessel into the vessel of normal width beyond the constriction. The second sound may normally be greatly decreased, or absent. Several writers have considered that weakness or absence of the second sound was of pathologic significance. The correspondent would be interested in consulting:

Goodman, E. H., and Howell, A. A.: Further Clinical Studies in the Auscultatory Method of Determining Blood Pressure, *Am. J. M. Sc.* **142**: 334, 1911.

Gittings, J. C.: Auscultatory Blood Pressure Determinations, *Arch. Int. Med.* **6**: 196 (Aug.) 1910.

2. The idea that kidneys produce an internal secretion appears to have originated in 1869 by Brown-Séquard and d'Arsonval. These investigators stated that nephrectomized animals died much sooner than the animals with ureters ligated and this finding they interpreted in the sense of an internal secretion produced by the kidney prolonging life. Death from nephrectomy then should be primarily due to the absence of this hormone and only secondary to uremia. These observations have been shown to be erroneous by Biedl and others.

In later years a number of workers have prepared extracts of the kidneys which in acute experiments have been shown to have diuretic action. There is no evidence, however, that this action is specific or that the kidney ever secretes into the blood substances having such diuretic action. Gigons (*Schweiz. med. Wchnschr.* **56**:34 [Jan. 16] 1926) has put forth the hypothesis that the kidneys produce a hormone or a substance which, acting on the blood, renders the blood itself diuretic. The literature contains reports of various kidney preparations as having reduced the albumin content of the urine when administered to patients with nephrosis. None of these clinical experiments appeared to be well controlled. They have not been duplicated by reliable experiments on animals.

Because of the fact that uremia itself is rapidly fatal, the method that has been so useful in securing preliminary evidence for hormone production by organs, namely, that of extirpation, is of no service in the case of the kidneys or in the case of the liver. A more difficult method of extraction, isolation and purification of the hormone must therefore be solely relied on and so far this method has yielded no conclusive results in the case of the kidneys. There is no reliable clinical or experimental evidence that Arthritin has any special value in renal disorders.

3. The skin test for pregnancy by means of the intracutaneous injection of the hormone of the hypophysis promises to be a simple and reliable test for pregnancy. It was worked out by Pollatschek and Porges, and as is mentioned in the Vienna letter in THE JOURNAL, August 17, to which the correspondent is referred, this simple method is now being used in all the Vienna clinics.

(*a*) As far as is known, no commercial firm is selling the hormone of the hypophysis. In many laboratories in this country and abroad, a great deal of work is being done with this hormone. As Aschheim first reported in 1927, the hormone is most readily obtained from the urine of pregnant women because such urine contains large quantities of this substance. However, the technic of isolating this hormone is a complicated one.

(*b*) In pregnant women, the injection of 0.2 cc. of the hormone produces no reaction, but in nonpregnant women a distinct red circle is formed after a few hours at the site of the injection. It is highly probable that the reaction is analogous to the specific skin reactions for infectious toxins such as the Schick and Dick tests. The hormone of the hypophysis is not specific for pregnancy because it is found in every individual. What is characteristic of pregnancy, however, is that large amounts of this hormone circulate in the blood of pregnant women and can be detected in the urine of these women within a few days after the first missed period.

Since the hormone of the pituitary can be found in the urine not only during pregnancy but also for a few days after delivery and after abortion, in cases of extra-uterine pregnancy, in cases of hydatid mole, and in chorio-epithelioma it will most likely be found that the skin test will likewise be positive in these cases.

TATTOOING TO CONCEAL SCAR

To the Editor:—A patient who has a white scar one-half inch wide and 5 inches long on his neck as a result of the application of glacial acetic acid to a chloasma, wishes a preparation to color the scar tissue a pale pink like the surrounding skin. What dye or stain could be used? Is there a pale pink preparation that could be used to tattoo the scar and would tattooing be without danger? Kindly omit name.

M.D., Pennsylvania.

ANSWER.—L. Dufourmentel (*Presse médical* **27**:755 [Dec. 10] 1919) has given the result of his investigation and experience in this line. He found that the usual red coloring material used commonly in tattooing is unreliable, fading from the action of tissue juices. He recommends for the yellows, reds and brown reds the earth colors, the reds of Sienna, Verona, Pouzzoles and Venice, which are oxides of iron, varying in color according to the degree to which they have been heated. Also the Mars red, yellow, orange, brown and violet are good. Salts of cadmium also give valuable reds and yellows, equally stable and nontoxic. The best white is antimony oxide. Coloring a white spot is much easier than trying to make a dark spot lighter; but an oil painter's experience is helpful.

Two instruments are necessary, a bundle of from three to six needles, whose points must be on the same level, and a silver spatula. It is convenient to have these two instruments on the opposite ends of the same handle. One or two small mixing dishes of glass or porcelain are needed, and a dish of alcohol and one of sterile distilled water. The colors are mixed with alcohol first, to sterilize them; then they are diluted with sterile water to a shade about twice as dark as that desired in the skin. The skin is washed with ether. Then an alcohol compress is bandaged on. The author does not specify how long it is to be allowed to remain. Tincture of iodine cannot be used. The paint is spread on an area about 1 cm. square and the skin pricked with the needles just short of drawing blood. Bleeding points will not be colored, but occasional bleeding shows that the work is being done at about the right depth. The pain is slight if the work is slowly done. On large areas the difficulty is to get the color even.

SANITATION OF TOILETS—ANTIPARATYPHOID INOCULATION

To the Editor:—1. What is the best method of keeping a public toilet clean and sanitary? We have had considerable trouble in keeping the public toilets in good condition. 2. I have been informed that after three injections of paratyphoid serum have been given, the immunity can be retained by giving 1 cc. of the serum each year. Is this correct?

D. E. LITTLE, M.D., Eufaula, Okla.

ANSWER.—1. Education of the public is probably the best method, although this may be difficult under certain conditions. There is general agreement that adequate lighting is an important aid. Frequent cleansing is a desideratum.

2. Presumably antiparatyphoid vaccine is meant. The duration of immunity to both typhoid and paratyphoid after vaccination is uncertain, but probably a considerable degree of immunity persists for four or five years following the standard antityphoid inoculation. There is no information available that makes it possible to distinguish between typhoid and paratyphoid in this connection. It is, of course, well known that the protective effect of typhoid vaccination may be overcome by a massive infective dose.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 12-13, 1929. Sec. Reg. Board, Dr. Sam J. Allbright, Searcy, Ark. Sec. Eclec. Board, Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith, Ark.

CONNECTICUT: Hartford, Nov. 12-13, 1929. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford, Conn.

DELAWARE: Wilmington, Dec. 10-12, 1929. Sec., Dr. Harold Springer, 1013 Washington St., Wilmington, Del.

FLORIDA: Miami, Nov. 19-20, 1929. Sec., Dr. William M. Rowlett, 812 Citizens Bank Bldg., Tampa, Fla.

IOWA: Des Moines, Nov. 7-9, 1929. Mr. H. W. Grefe, Iowa Dept. of Health, Des Moines, Iowa.

KANSAS: Topeka, Dec. 10, 1919. Sec., Dr. Albert S. Ross, Sabetha, Kan.

MAINE: Portland, Nov. 12-13, 1929. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland, Me.

MARYLAND: Baltimore, Dec. 10-13, 1929. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore, Md.

MISSOURI: Kansas City, Nov. 12-14, 1929. Sec., Dr. James Stewart, Capitol Bldg., Jefferson City, Mo.

NEVADA: Carson City, Nov. 4-6, 1929. Sec., Dr. E. E. Hamer, Carson City, Nev.

NORTH CAROLINA: Durham, Nov. 27, 1929. Sec., Dr. J. W. MacConnell, Davidson, N. C.

OHIO: Columbus, Dec. 4-6, 1929. Sec., Dr. H. M. Platter, 85 East Gay St., Columbus, Ohio.

SOUTH CAROLINA: Columbia, Nov. 11, 1929. Sec., Dr. E. A. Boozer, 505 Saluda Ave., Columbia, S. C.

VIRGINIA: Richmond, Dec. 3, 1929. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke, Va.

WEST VIRGINIA: Morgantown, Nov. 26-28, 1929. Sec., Dr. W. T. Henshaw, Public Health Council, Charleston, W. Va.

WISCONSIN: Milwaukee, Dec. 14, 1929. Basic Science. Sec., Prof. Robert N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis.

West Virginia July Examination

Dr. W. T. Henshaw, secretary of the Public Health Council of West Virginia, reports the oral, written and practical examination held at Martinsburg, July 9-11, 1929. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Twenty-nine candidates were examined, 27 of whom passed and 2 failed. Seven physicians were licensed through reciprocity with other states. The following colleges were represented:

PASSED College	Year Grad.	Per Cent
Emory University School of Medicine	(1928)	83.3, (1929) 85.1
Northwestern University Medical School	(1929)*	90.3
Rush Medical College	(1929)	83.8
University of Louisville School of Medicine	(1929)	82.1, 83.3, 85.1
University of Maryland School of Med.	(1928)	85.9, (1929) 87, 87.3
Harvard Medical School	(1929)	83.3, 90.9
University of Michigan Medical School	(1928)	89
Cornell University Medical College	(1926)	84.6
Ohio State University College of Medicine	(1929)	89.6
Western Reserve University School of Medicine	(1928)	88.1, 85.3
Jefferson Medical College of Philadelphia	(1928)	80.8
Meharry Medical College	(1928)	86.3
Medical College of Virginia	(1928)	83.1, (1929) 82.9, 84, 86.1, 86.3, 87.6
University of Virginia Department of Medicine	(1929)	89.5, 89.7

FAILED Medical College of Virginia	(1929)	77.1, 83.6†

LICENSED BY RECIPROCITY College	Year Grad.	Per Cent
Emory University School of Medicine	(1928)	Georgia
University of Louisville School of Medicine	(1927)	Kentucky
Johns Hopkins University School of Medicine	(1915)	Connecticut
Ohio State University College of Medicine	(1928)	Ohio
Medical College of South Carolina	(1925)	S. Carolina
Medical College of Virginia	(1926)	Virginia
University of Virginia Department of Medicine	(1926)	Virginia

* This candidate has completed his medical course and will receive his degree on completion of a year's internship.

† This candidate fell below 65 per cent in one subject.

Hawaii July Examination

Dr. James A. Morgan, secretary of the medical board of Hawaii, reports the written examination held at Honolulu, July 8-11, 1929. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Two candidates were examined and passed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent
New York Homeopathic Med. College and Flower Hosp.	(1924)	84.5
Western Reserve University School of Medicine	(1928)	86.7

GRADUATE TRAINING FOR UROLOGY

JOSEPH F. MC CARTHY, M.D.
NEW YORK

For the past twenty-five years I have been continuously engaged in the training of undergraduate and graduate students in the field of urology. In retrospect this has been an exceedingly pleasant task, because of its contacts as well as the obvious constructive results accomplished. For reasons of practicality and because of limitation of time I will consider here solely the subject of graduate training in urology.

There is a twofold purpose in this paper: 1. The public expression of convictions long entertained as the result of many years of intimate contact with urologists, first as matriculants and later as specialists, as to what should constitute the practical and what the ideal in their training. 2. The hope that, if the conclusions offered here appear acceptable, they may and should prove in part, at least, if not wholly, adaptable to other similar fields of specialistic endeavor.

PLAN OF GRADUATE COURSES

From a very bad heritage of the briefest kind of so-called courses in the department of urology in which I have the privilege of functioning as director, we have arrived by progressive stages to the point at which a considerable part of the teaching machinery of our institution is cooperating in the conduct of two intensive six months' courses yearly.

These courses are limited to ten young graduates of medicine who must meet the rigid requirements of age, character, personality and hospital internship exacted by the department, as well as the school authorities.

The following description will serve but sketchily to outline the framework of these courses. The departments of pathology, bacteriology, biochemistry, general medicine, neurology, proctology, ophthalmology, gynecology and anesthesia collaborate with us in the teaching program.

The matriculants' time is fully occupied on an hourly schedule from 9 a. m. until 5 p. m., with an hour for luncheon. Teachers of proved ability in their respective fields of activity instruct these students in the following subjects: cysto-endoscopic instrumentation; diagnosis and treatment, and roentgenology, including the taking of seminal vesiculograms, cystograms and ureteropyelograms, as well as their interpretation. Demonstrations are given in operative instrumental therapy; urethral treatments; diathermia of bladder tumors, and intra-ureteral manipulation. Courses in female cystoscopic diagnosis are also given.

Operative urologic clinics are held in small operating rooms, students being assigned to each cadaver. The operations are elucidated by description and lantern slides and are then performed by the students, who alternate as assistants and operators.

Operative urologic clinics are given in small operating rooms twice weekly. On Tuesday morning two hours is given to this work and on Thursday the entire morning is assigned. The usual procedure of history taking, diagnosis and treatment is carried out, most of these histories having been taken by the students; but because of the smallness of the operating room and the limited class and the fact that the matriculants are known to us personally, the proceedings are less formal than is customary. Students are encouraged to ask questions—to inquire as to the reasons for various technical steps.

After each case, operative omissions and possible errors in technic are frankly discussed, as are the methods of prominent urologists throughout the country. Departures from the methods demonstrated by us are especially stressed, as well as the reasons for such departures. The work-up of these cases—history taking, urinalyses, chemical studies of the blood, as well as postoperative management—under adequate supervision as a matter of course, is in large measure carried out by these matriculants.

Postoperative management constitutes the routine of ward rounds which continue throughout the course.

Supplementing the courses in urologic surgery on the cadaver and in clinical surgery are demonstrations on the cadaver in surgical anatomy, as well as the general surgical complications encountered in urology.

Courses in diagnosis and office treatment consist of clinical demonstrations and lectures covering acute and chronic urethritis and their complications, as prostatitis, seminal vesiculitis, epididymitis, cystitis, arthritis and urethral stricture; the technic of irrigations, injections, instillations, sounds, dilators and filiforms. Details of office equipment and management are given during visits to our respective offices. In the matriculants' work as assistants to the outpatient department, the opportunity to apply these principles is always at hand. Dogmatism and rote are discouraged among our teachers; differences in technic or in points of view are encouraged. They are expected, however, to support their contentions with adequate logical reasoning. Our theory is that we are teaching thinking men; therefore, their questions, in fact their critical questioning, are welcomed for reasons of further clarification and for the fact that it compels additional search into our minds the better to sustain the position taken.

Courses in regional anesthesia of the genito-urinary tract include the special anatomy involved, armamentarium, preparation of patients, and indications and contraindications for the various procedures. Colored fluids are employed. Dissection follows these injections for the purpose of anatomic demonstration and to ascertain the thoroughness of the infiltration. During this course the physiologic action of the drugs employed, their lethal properties, accidents, and the management of untoward manifestations as well as the preparation in anticipation of such manifestations are explained. Finally, special lectures are given by recognized internists on basic drugs, such as digitalis, and their preparations.

The course in practical biochemistry is designed to equip the urologist with sufficient fundamental knowledge of normal metabolic reactions to enable him to utilize this information as a criterion of abnormal metabolic processes. The chemical composition of the blood and other body fluids and of the urine is considered in detail. The variations from the normal in the composition of these fluids produced by subnormal renal, hepatic or cardiac functions are discussed, and the diagnostic and therapeutic value of the analytic data are emphasized. Attention is given to the various types of acidosis and alkalosis, and the indicated therapeutic measures. The diagnostic and prognostic significance of the various colorimetric renal functional tests is thoroughly elucidated and the newer aspects of nutrition are practically applied.

In bacteriology, lectures and practical laboratory exercises are given; urine is collected for bacteriologic examination; for microscopic examination for colon bacilli, tubercle bacilli and other bacteria; for cultures for *B. coli,* and for the preparation of autogenous vaccine, as in vaccine therapy. The students are taught recognition of the gonococcus and of spirochetes; serologic diagnosis of syphilis by complement fixation, flocculation and precipitation tests; human blood groups, and tests of compatability for transfusion. Operative demonstration in the technic of transfusion supplements these studies.

In the courses on embryology and urologic pathology the significance of embryology in the various anomalous conditions encountered in urology is considered and demonstrations are given of gross and microscopic specimens illustrating the inflammatory and neoplastic lesions of the kidney, ureter, bladder, prostate, seminal vesicles and testes, as well as postmortem examinations when the opportunity occurs. A course in the neurologic conditions encountered, as well as the importance of this subject in the field of urology, is given by the director of the department of neurology or his associate professor.

Instruction in proctologic diagnosis and treatment, when they have a bearing on the subject of urology, is given under the supervision of the department of proctology; a course in the study of eyegrounds is given by the director of the department of ophthalmology.

Finally, the subject of physical diagnosis is carefully considered by the department of medicine, as well as the preoperative and postoperative medical complications commonly encountered in urology.

Students are expected also to assist in the research studies carried on during the period by the various members of the staff.

COMMENT

The basic pedagogic conception of this work is the adequate training of urologic internists. The gratifying results encountered to date have encouraged us to discontinue all other courses, save that of the more prolonged resident internship, and to concentrate our entire departmental teaching staff on two six months' periods, with classes of ten carefully selected hospital graduates.

It is altogether probable that, with the interdepartmental cooperation as here described, a seven-hour daily schedule in one institution and without material lapses in time, these courses are as comprehensive as would obtain in the ordinary two year curriculum.

By the acid test of results accomplished—the enlarged hospital affiliations effected by these matriculants, the progress made and the enthusiastic reports from students and from their associates—we are encouraged in the conviction that such courses serve to meet a definite and a pressing communal need.

During the present year it is our plan to establish resident internships in urology of two years' duration. It is our intention to limit these internships to students completing the six months' courses, who have meanwhile demonstrated conspicuous ability.

I believe that to continue to offer scheduled courses shorter than those here described to specialists in technical branches, such as is urology, is but to perpetuate the privatdozent system of Europe. On the other hand, the pedagogic assumption that a student who has received his A.B or B.S degree, and has spent four or five successful years in medical school and two equally successful years as a hospital intern is not qualified to practice urology as a specialty without two or three years of additional urologic training, implies an astigmatic visualization of practical requirements.

The number of men graduating under such conditions—ideally desirable as they doubtless are—with every worth-while institution in this country functioning to full capacity, would be so small as to prove ridiculously inadequate to meet the requirements of our enormous population. Nor could they ever hope to meet them.

Modern warfare is planned by generals but is carried out by colonels, captains and lieutenants. The same holds good in the warfare against disease. Because of the inadequate number of qualified urologists, much unnecessary suffering is endured and many fatalities occur among our people by failure of the early recognition, for example, of the cause of hematurias, or of the early diagnosis of renal tuberculosis, a matter of routine to the trained urologist.

Dogmatic utterance has no place in the consideration of so important a subject as the training of specialists. Academicism with a judicious admixture of Scotch practicality may prove to be the desirable formula.

Education should not be cheapened or pauperized. It should be paid for in work performed, in fees or by promise to pay—work performed as an intern; fees by those capable of paying without undue hardship. Education in medicine, or for that matter in any other intellectual pursuit, should never be denied an individual with the mental equipment, the character and the future promise because of the lack of funds. The machinery of endowment should, at least in this country, be always at hand

to bring the really worth-while student to the point at which he becomes a useful factor in his community and is able to provide a competence for himself and his dependents; but, sooner or later, whether it be to the institution or to the endowment, he should, when he can without embarrassment to himself, return the money advanced and with interest to the end that another desirable student may carry on as he carried on before him.

Finally, from the standpoint of medical education, it seems to me that all technical courses shorter than six months should, with perhaps a few exceptions, be denied the sanction of our educational councils. There are two distinct needs in the present-day practice of specialism: one, an intensive, properly coordinated six months' course; another, a resident internship of at least two years for a much more limited number, these interns during their spare time participating in the special training, technic and research. Such an arrangement might permit of the cooperation of the recognized societies to the end that none but sufficiently young and properly qualified matriculants could avail themselves of this teaching.

2 East Fifty-Fourth Street.

Book Notices

RICKETS INCLUDING OSTEOMALACIA AND TETANY. By Alfred F. Hess, M.D., Clinical Professor of Pediatrics, University and Bellevue Hospital Medical College. Cloth. Price, $5.50 net. Pp. 485, with 52 illustrations. Philadelphia: Lea & Febiger, 1929.

As the author appropriately states in his preface with regard to the publication of a new book on rickets, "a new era has come about and many of the time-honored theories in the textbooks are no longer tenable either in essence or detail—our concept of rickets may be divided broadly into two periods, the one which may be termed the clinical and pathological era comprises the long span between 1650 and 1918—and the other, that of the newer rickets, embraces a decade from 1918 until today." He presents an interesting introduction on the history of rickets. The first satisfactory description of rickets is attributed to Soranus of Ephesus, from whose account it seems that rickets was not an exceptional phenomenon in Rome during the second century of the present era. The names of prominence in the historical discussion include Galen, Theodosius of Bologna, Ambroise Paré, Daniel Whistler, Francis Glisson, Elsaesser, Kassowitz, Friedleben and Pommer. In the chapter on the geographic distribution of rickets, Hess notes that a map of the incidence of rickets is the practical equivalent of a map of deficiency of sunlight. In addition, certain qualifying factors are emphasized, such as the degree of congestion of population and industrialism. Jules Guérin (1839) is given credit for the first attempt to produce experimental rickets. Pommer in 1885 established the histologic criterion for this disease; Heubner in 1909 called attention to the significance of phosphorus in the diet. Hess observes that the most significant advance in our newer knowledge of rickets is an appreciation of the importance of ultraviolet energy in connection with its etiology and cure. The specific activation of foods was demonstrated in 1924 by Hess, Steenbock and co-workers. The author points out how animal experimentation has served to coordinate two seemingly unrelated therapeutic experiences of the clinic—the action of ultraviolet irradiation and that of cod liver oil. The author observes that rickets is distinguished by the remarkable number of factors that seem to play a part in its causation. He discusses in detail heredity, age, sex, growth, pigmentation of the skin, diet, ultraviolet rays, vitamins and endocrines, in their etiologic relationship to rickets and concludes with the apt remark of Saleeby that rickets must be classed as one of the "disorders of darkness." He states that our knowledge of the relation of ultraviolet rays to rickets has changed our entire conception of this disorder and has necessitated a revision of our ideas regarding its etiology and treatment.

The various theories as to the pathogenesis of rickets are presented and classified in the following categories: (1) lack of calcium or phosphorus in the diet; (2) faulty absorption of calcium and phosphorus from the intestinal canal; (3) developmental disturbances in the cartilaginous and osteoid tissues; (4) a deficiency of calcium or of phosphorus in the blood; (5) a combination of a chemical deficiency in the blood and unfavorable local condition in the bone or cartilage. The main fact in connection with pathogenesis seems to be that the inorganic phosphate of the blood is almost regularly diminished in rickets. The characteristic point in the pathology is the excess of osteoid tissue. There is a thorough discussion of the roentgenographic signs in rickets with numerous illustrations of the typical "cupping" and "fraying" of the epiphyses. There is an instructive presentation of the subject of late, or juvenile, renal and celiac rickets. A fascinating chapter is devoted to a consideration of osteomalacia and it is interesting to know that there are still large districts where it is of frequent occurrence and constitutes an important medical problem. With regard to tetany, Hess notes it is not an entity from a pathogenic point of view; it is merely a symptom complex manifesting an increased irritability of the nervous system and may be incited by a variety of factors. Loeb's quotient $\frac{Na + K}{Ca + Mg}$ is regarded as a framework, representing the various agents which are constantly working toward or against the development of tetany in the animal body. Hess devotes the final chapter to a discussion of the treatment of rickets. There is a thorough presentation of this subject, beginning with a history of cod liver oil therapy, completed by the story of the modern biochemical researches ending in the discovery of viosterol. This book, by one of the leaders in the investigation of the subject, should be of great practical interest to the pediatrician as well as to the practitioner of medicine and the nutrition worker. It presents a clear logical discussion of the subject in an historical, evolutionary and critical style from the pen of a creative worker in this field of knowledge. The volume will undoubtedly serve for a long time as a source book to all those who are interested in the study of rickets.

LEHRBUCH DER DIAGNOSTISCHEN UND OPERATIVEN CYSTOSKOPIE. Ureterenkatheterismus. Funktionelle Nierendiagnostik. Pyelographie. Intravesicale Operationen. Von Dr. Eugen Joseph, a. o. Professor an der Universität, Berlin. Second edition. Paper. Price, 48 marks. Pp. 254, with 290 illustrations. Berlin: Julius Springer, 1929.

Modern urologic diagnosis is dependent not only on cystoscopy but also on ureteral catheterization, a study of renal function, roentgen examinations and pyelography. These subjects as well as operative cystoscopy are considered by the author, and because of its completeness the book is a novel departure from the usual works on cystoscopy. The subject of cystoscopy, of course, takes the lead and about one half of the book is devoted to its exposition. A point that is well taken and of such importance that it is rightly stressed by the author is the value of the history and a careful physical examination before cystoscopy is done. The various types of cystoscopes and the technic involved in achieving the best results in cystoscopic examination are discussed in a thorough manner, as well as the various kinds of anesthesia. The different cystoscopic appearances in the usual and the rare bladder lesions are given. The cystoscopic pictures are beautifully and profusely illustrated. Even rare lesions such as malakoplakia and those caused by *Bilharzia* are well illustrated. The value of roentgen examination and the subject of pyelography are carefully presented and well illustrated. Operative cystoscopy is ably treated. The endovesical treatment of bladder tumors, the crushing of stones in the bladder under vision, the treatment of stones in the ureter and the technic of ureteral dilation receive the attention which these subjects should always receive in a work on operative cystoscopy, but it is not often that the descriptions are so detailed as in this illuminating and profusely illustrated work.

SOME PRINCIPLES OF MINOR SURGERY. By Zachary Cope, M.S., M.D., F.R.C.S., Surgeon to St. Mary's Hospital, Paddington. Cloth. Price, $3.50. Pp. 159, with 82 illustrations. New York: Oxford University Press, 1929.

This practical addition to the Oxford medical series presents clearly and concisely important principles underlying the treatment of certain surgical conditions. Chapters deal with antiseptics and the treatment of wounds, acute inflammation and particularly with acute abscess, common sprains, ambulatory fractures, and the urinary retention of prostatism. An entire

chapter, with excellent diagrams, is devoted to a summary of Kanavel's work on infections of the hand. The illustrations are well done and add to the clarity of exposition. The volume is written especially for practitioners. It can readily be recommended to surgical house officers, particularly to those working in outpatient departments.

SYPHILITISCHE UND SYPHILOGENE MAGENERKRANKUNGEN. (GASTROLUES.) Von Prof. Dr. Roman Luria, Direktor der medizinische Klinik des Lenin-Staatsinstitutes für ärztliche Fortbildung in Kasan (U. S. S. R). Paper. Price, 9.80 marks. Pp. 193, with 27 illustrations. Berlin: S. Karger, 1929.

This volume on gastric syphilis is based on a complete survey of the literature and on a wide personal experience of the author. An attempt is made to establish a clinical picture of the earlier stages of gastric syphilis based on the assumption of chronic gastritis with reduction or atrophy of the gastric glands and resulting subacidity or anacidity. Decreased excretion of neutral red by the gastric mucosa is also considered of importance. Ulcer on a syphilitic basis is next discussed. It is pointed out that this is due to ulceration of an infiltrated or gummatous area in contrast to primary ulceration without previous infiltration, as occurs in peptic ulcer. Decreased acidity is considered of importance in this form of syphilitic disease. Gummatous disease of the stomach is described in great detail. The lesion is usually discovered by the surgeon who operates under the false notion that he is dealing with carcinoma. Discrepancy in the grouping of symptoms should arouse suspicion of the real condition. Still another stage is the fibroblastic form, which is a late variety and occurs in the form of adhesions, stenosis, hour-glass stomach and diffuse infiltration of the organ resembling linitis plastica. This group is of importance because it is refractory to antisyphilitic treatment and is best treated by surgery because of the extensive fibrosis that is present. Finally there is a description of the dyspeptic symptoms due to syphilitic changes elsewhere than in the stomach itself. The most frequent involvement is of the nervous system. It is stated that dyspeptic symptoms occur more frequently as a result of neurosyphilis than of actual syphilitic change in the stomach. Considerable attention is given to diagnosis. There are no pathognomonic signs because the underlying pathologic condition may be gastritis, ulcer, gumma or fibrosis, or a combination of these. Great significance is attached to atypical grouping of symptoms, history or evidence of syphilitic infection, subacidity or anacidity, and the good results with antisyphilitic therapy. Treatment is discussed in detail and a complete bibliography is appended.

THE TREATMENT OF FRACTURES AND DISLOCATIONS IN GENERAL PRACTICE. By C. Max Page, D.S.O., M.S., F.R.C.S., Surgeon to St. Thomas's Hospital, and W. Rowley Bristow, M.B., B.S., F.R.C.S., Surgeon to the Orthopædic Department, St. Thomas's Hospital. Third edition. Cloth. Price, $4.25. Pp. 284, with 161 illustrations. New York: Oxford University Press, 1929.

This provides a "ready work of reference" which should be of real service to the general practitioner, the house surgeon or the medical student. Although many books on fractures have been edited since the World War, this concisely written, well illustrated treatise should be of great value to this group for which it was intended. Startling new methods of treatment are not described, but the suggestions here given are a product of the experience gained during the Great War. The text is so aptly and completely illustrated and so clearly and simply set forth that a junior medical student with some knowledge of the anatomy of the region affected should be able to take it as a guide and successfully treat any simple fracture. The authors are impartial in their discussion of open reduction methods. They are inclined to be conservative in their program, and while they are neither radically opposed to nor rabidly in favor of it they draw definite pictures of the indications for operative measures. No attempt is made to describe all the methods or any of the more elaborate apparatus that may have been successful in the hands of various widely experienced surgeons. For that reason the general practitioner or the medical student will be able to read and understand. He will not be in danger of becoming bogged down in what to him might be a mire of technical terms and details or descriptions of intricate methods and apparatus which his lack of experience would not qualify him to evaluate.

DIE SOZIALE UND KLINISCHE BERECHTIGUNG ZUM KÜNSTLICHEN PNEUMOTHORAX (PTH.) IM KAMPF GEGEN DIE TUBERKULOSE. Von Dr. Georg Katz, Oberarzt. Mit einer Einleitung von Prof. Dr. W. Zinn. Paper. Price, 4.50 marks. Pp. 60, with 8 illustrations. Leipzig: Johann Ambrosius Barth, 1929.

The author is far in advance of the Brauer school of twenty years ago in that he urges the early application of lung collapse, contrary to Brauer's dictum, which was that all other available means should have been tried before resorting to pneumothorax. Katz shows that much better results are being obtained now that the procedure is being instituted in early cases. He also draws attention to the fact that many patients, by reason of their scant means, are unable to spend a year or more in a sanatorium; impoverishment and loss of position are common results of a long drawn out "cure." While employers are frequently willing to help a tuberculous employee, they are not willing to pension him indefinitely. Artificial pneumothorax materially shortens the period of invalidism in many cases and is an important factor in the return of the patient to a fair wage earning capacity. The author finds, as is to be expected, that laborers and mechanics are able to resume their callings, after lung collapse, in smaller numbers than patients of sedentary occupations. Katz also points out that lung collapse shortens the time of active infectivity—a factor of much value to the community. The book contains many well worked out tables on results of treatment, length of cure, and permanence of working capacity. Although it is of necessity concise, it is complete in necessary detail. It should give an impetus to the more general use of pneumothorax whenever needed.

PRACTICAL HANDBOOK FOR DIABETIC PATIENTS WITH 180 INTERNATIONAL RECIPES (AMERICAN, JEWISH, FRENCH, GERMAN, ITALIAN, ARMENIAN, ETC.). By Abraham Rudy, M.D., Assistant in Medicine, Boston City Hospital. Introduction by Dr. Frederick M. Allen. Cloth. Price, $2. Pp. 180, with illustrations. Boston: M. Barrows and Company, 1929.

This handbook has one definite advantage over many others recently published. In addition to the usual outline of physiology, the outlined description of the disease, and its treatment, there are appended diet lists for patients of different nationalities. Since one of the main difficulties in the treatment of diabetes lies in the translation of dietetic terminology into food, this book should fill a real need.

RHEUMAPROBLEME: Gesammelte Vorträge, gehalten auf dem I. Ärztekursus des Rheuma-Forschungs- Instituts am Landesbad der Rheinprovinz in Aachen vom 18. bis 20 Oktober 1928. Von Prof. Dr. Curschmann, Direktor der Med. Universitätsklinik, Rostock, Prof. Dr. Eckstein, Oberarzt der akadem. Kinderklinik, Düsseldorf, und anderen. Paper. Price, 12 marks. Pp. 181, with 55 illustrations. Leipzig: Georg Thieme, 1929.

This brochure includes a collection of addresses delivered as part of a course for physicians at the newly established institute at Aachen, Germany, for the investigation of the rheumatoid problem. An introductory foreword is followed by eleven contributions by different observers and students of various aspects of the field. The subjects considered are, in order, essential muscular rheumatism; rheumatism in childhood; blood observations in rheumatic diseases; pathologic anatomy and histology of infectious rheumatism; clinical aspects of chronic joint diseases; pathologic anatomy of chronic joint diseases; treatment of chronic rheumatic diseases from the standpoint of physical therapy and internal medicine; the surgical treatment of chronic joint diseases; orthopedic surgery and rheumatism; the etiology and treatment of acute inflammation of the joints, and differential diagnosis between gout and chronic rheumatoid conditions. The fields indicated are not all treated as fully as a reading of the titles would suggest, and the several contributions are unequal in importance. Some are illustrated. Taken collectively, however, they represent in general the continental attitude and afford good evidence of the seriousness with which the Germans are beginning to turn to the problem of arthritis. Certain of the clinical points of view expressed are rather at variance with some rather rigid opinions that have largely prevailed in this country. Thus, on page 67 Gudzent in "Clinical Aspects of Chronic Joint Disease" remarks: "As to the question of oral sepsis (as a cause of arthritis) I am, in agreement with Schottmüller, very skeptical. From my experience, I cannot agree with the observations of the Americans." As regards the rôle of the tonsils in acute rheumatism of the joints, Gudzent cites

Holsti to the effect that "not disease of the tonsils but the arthritis may be primary." While this pamphlet constitutes in no sense an exhaustive treatise of the subject, it serves as a timely contribution to the program now going forward in this country, and especially in Europe, for better treatment and more intensive study of rheumatoid diseases. Being in German, these addresses will probably reach few readers in America. The effort represented in this collection, however, cannot fail to have some general influence in arousing further interest in the problem of arthritis beyond the relatively small circle of scrutiny and study that now obtains. The printing, illustrations and charts are excellent.

TREATMENT OF THE COMMON DISORDERS OF DIGESTION. A Handbook for Physicians and Students. By John L. Kantor, Ph.D., M.D., Visiting Physician in Gastrointestinal Diseases, Vanderbilt Clinic, Presbyterian Hospital. Second edition. Cloth. Price, $6. Pp. 297, with 88 illustrations. St. Louis: C. V. Mosby Company, 1929.

In this edition appear chapters on diseases of the colon and organic diarrheas and other additions to the volume as it originally appeared, such as new material on vitamins, modified Sippy diet, liver diet in pernicious anemia, and surgical treatment of ulcer. The author's own experience is the source of information, although he does not fail to give the accepted methods of treatment and other forms with which he has had little or no experience. He stresses the establishment of good habits of diet early in life. The instructions covering the object of diet, methods of arrangement of a particular diet and the general methods of treatment, as gastric lavage, the use of drugs, physical therapy and hydrotherapy, are given their due throughout. He emphasizes the necessity of individualization in treatment. The subject matter is well arranged and presented. Some unfortunate terms have crept in, such as inheritance by children of weak digestion, and "food lies heavy on the stomach." Despite the work of Dr. Moody on ptosis and its relation to health, much undue stress is laid on the subject as a cause of ill health. Colonic irrigation is recommended by the author. The question arises as to whether physicians adopt this form of treatment because of its fancied intrinsic value or as a means of meeting the competition of the various cultists. The matter of bland diet seems to be unsettled. By some it is considered to be one free from all residue; by others it includes well cooked vegetables and fruits. The value of histamine in differentiating true from relative achloryhdria is not mentioned. Single tests of stomach contents are not decisive. The dangers of the use of epinephrine for the relief of biliary colic in patients with cardiac disease should not have been omitted. A patient who has just emerged from an attack of biliary colic, it seems, should not be tortured or run the risk of having peristalsis, possibly painful, set up again by an emetic to clean out the stomach. The time-worn subject of autointoxication from low cecum or other low organs finds a berth here. On page 233 the author recommends the withdrawal of all cathartics in irritable colon and two pages farther on recommends the use of castor oil or salines once a week. This is probably a revival of the old Saturday night bath. Resection of the stomach in peptic ulcer does not find a strong supporter in the author, but gastro-enterostomy is the operation of choice. What may appear in this review as glaring defects are really not so and their correction would enhance the value of what is a good exposition of the treatment of disorders of digestion. There is a good selection of reproductions of roentgenograms, well selected diet lists and an ample bibliography.

ELEMENTS OF HYGIENE AND PUBLIC HEALTH: For the Use of Medical Students and Practitioners. By Rai Bahadur Jaising P. Modi, L.R.C.P. &S., L.F.P.S., Reader of Medical Jurisprudence in the Faculty of Medicine, Lucknow University. With an introduction by Lieut.-Col. E. J. O'Meara, F.R.C.S., D.P.H., I.M.S., Principal, Agra Medical School. Third edition. Cloth. Price, 10/ - net. Pp. 645, with 74 illustrations. London: Butterworth & Company, 1928.

The fact that this book, said to treat hygiene and public health from the East India standpoint, is in its third edition shows that it has been found useful. The broad field covered precludes all but the most cursory treatment of many subjects. The only reference to sprue, a disease of wide occurrence in India, is that "mica suspended in water is sufficient to cause sprue." The printing and proof-reading leave something to be desired.

Medicolegal

Trauma, Genital Tuberculosis and Workmen's Compensation

(Green's Case (Mass.), 165 N. E. 120)

Green was in receipt of compensation under the workmen's compensation act, on account of a hernia that followed an injury, Nov. 16, 1926. The insurer filed a claim for review. The industrial accident board then found that the injury had aggravated a preexisting genital tuberculosis, which totally incapacitated the employee. In the superior court of Suffolk county a decree was entered in the employee's favor. The insurer appealed to the supreme judicial court of Massachusetts, and there the decree of the superior court was reversed.

The question before the court was whether there was any evidence to warrant the finding of the industrial accident board that the injury aggravated, to the point of total incapacity for work, a preexisting genital tuberculosis. If the injury did so, the employee was entitled to compensation. An "impartial physician" testified that a strain such as the employee received, resulting in a hernia, could neither cause genital tuberculosis nor awaken a quiescent tuberculosis of the genitals. Another physician, testifying for the employee, was asked: "Assuming that there was trauma sufficient to cause a hernia, might that trauma causing a hernia awaken a quiescent genital tuberculosis?" He answered: "I think that is reasonable—it does not cause it but the tubercular bacilli is in the epididymis and if there is a blow or trauma that is sufficient to cause a hernia it is conceivable to witness that the trauma causes irritation around the tubercle bacillus and awakens it and makes it become active." Considering the nature of the disease, the court said, even if it could be inferred that the germs of genital tuberculosis were in the system at the time of the injury, there was no evidence to warrant a finding that the strain accelerated or hastened their development. The fact that the condition of the employee might reasonably result from the injury, or that it was conceivable that this condition might so result, was not sufficient to justify the conclusion that the condition was causally related to the injury. A mere conjecture is not proof; there must be evidence to support the finding.

Itemization of Bill; Employment of Physician in Accident Case; Duration of "Emergency" Service

(Columbus & Greenville Ry. Co. v. Mississippi Clinic (Miss.), 120 So. 203)

One Curry, who represented himself as a claim agent of the appellant railroad company, authorized Dr. Yates, one of the physicians operating the appellee clinic, to treat two automobilists who had been injured by a passenger train operated by the appellant. When the railroad company refused to pay for the services rendered, the clinic obtained judgments against it. The company then appealed to the supreme court of Mississippi, division B. There the judgment was reversed and the case remanded.

Dr. Yates was the only witness who testified in the case. The railroad company objected to his testimony on the ground that the accounts submitted by the appellee were not itemized as required by statute. Under the statute, said the court, the railroad company was entitled to a bill of particulars, so that it might better make defense, and unless a bill of particulars was filed, no evidence was admissible to prove the accounts. Anything less than an itemized account setting out each visit made by Dr. Yates and the charge therefor would not be a bill of particulars. Since the statute was not complied with, the lower court erred in admitting any testimony. The lower court erred also in permitting Dr. Yates to testify that Curry told him that he, Curry, was a claim agent of the railroad company. Neither agency nor the scope thereof can be proved by the declaration of the person claiming to be an agent.

The employment of a physician, said the court, is not ordinarily within the scope of a subordinate agent or employee of a railroad company, but there may be extraordinary situa-

tions giving authority to employ a physician. An emergency calling for immediate action in order to save life or prevent suffering may be sufficient to confer authority of that character on the highest representative of the railroad company where the emergency is. Even though an agent has no authority to employ a physician, such employment by him may be ratified by his principal; it has been held that when, after knowledge of the employment of a physician by a conductor to care for a man injured by a train, the railroad company failed to notify the physician that it would not be responsible for payment, the physician could recover from the company the value of his services. Authority of a subordinate agent to employ a physician arises by implication, however, only when the emergency makes such authority necessary. The courts have not confined these principles to injured employees of the company. They have been extended to passengers and others not in the service of the railroad company. Liability arising out of the exercise of such implied authority does not go beyond the emergency. The services of the physician may be continued only long enough to enable him to communicate with the principal and, if the principal declines to be responsible for payment, long enough thereafter to enable the physician to give notice to the proper relief authorities, if the injured person is entitled to public care. To hold the railroad company responsible for payment for services beyond those rendered necessary by the emergency, there must be a special contract. In the present case, in attending one of the injured automobilists for six weeks and the other for several days after their respective injuries were received, the clinic was not performing an emergency service and the railroad was not bound to pay for such services.

Consent of Minor to Vaccination

(Gulf & S. I. R. Co. v. Sullivan (Miss.), 119 So. 501)

Sullivan, a minor, aged 17 years, claimed to have been employed as a section hand by the appellant railroad company without the consent of his parents. Under orders of his foreman he was vaccinated by a physician retained by the company. He knew the purpose of the vaccination. The vaccination resulted in the serious impairment of the use of his arm. He sued the company, claiming that his employment was in violation of section 1080, Code of 1906, and section 848 of Hemingway's Mississippi Code of 1927, which make it a criminal offense to "persuade, entice, or decoy away from its father or mother with whom it resides, any child under the age of twenty-one years if a male, or eighteen if a female, being unmarried, for the purpose of employing such child without the consent of its parents, or one of them." His vaccination under the circumstances, he contended, in the absence of the consent of his parents, was unlawful. Judgment was rendered for Sullivan, and the railroad company appealed to the supreme court of Mississippi, Division A, denying liability unless the vaccination were negligently done. There the judgment was reversed.

The vaccination of one person by another without the consent of the person vaccinated, said the supreme court, citing as authority American Law Institute Restatement, Torts (Tentative No. 1), sections 12, 13 and 74, subjects the one who vaccinates to liability, regardless of whether the vaccination is performed negligently or not, and if the person vaccinated is by reason of his youth incapable of understanding and appreciating the consequences of the vaccination, his assent to the vaccination is not consent thereto.[1] The consent of a parent, if it is within his power to give it, has the same effect as the consent of the person vaccinated would have if he had the capacity to give the consent. From the evidence, the court concluded that it was manifest that Sullivan had sufficient intelligence to understand and appreciate the consequences of vaccination and therefore was capable of giving a valid consent to it. Furthermore, since his parents knew of his employment, their passiveness must be held to be an implied consent to it and its necessary incidents.

Life Insurance: "Cause Originating After the Delivery of the Policy" Defined.—A clause in an insurance contract provided for the payment of benefits by the insurer in event of the permanent disability of the insured "from any cause originating after the delivery of the policy." The policy was delivered in September, 1925. The insured had sleeping sickness, January, 1926, and as a result became permanently disabled. The sleeping sickness was attributed to an attack of influenza in February, 1925, antedating the delivery of the policy. The parties, said the supreme court of Arkansas, did not contract with reference to latent germs in the body prior to the delivery of the policy. The court construed the word "cause," as used in the policy, as the equivalent of "illness" or "disease," and held that the insurer was liable.—*Home Life Insurance Company v. Allison (Ark.), 14 S. W. (2d) 229.*

Result of Voluntary Exposure to Disease Not an Accident.—The deceased had an idiosyncrasy toward cedar wood. Whenever he worked in or around cedar lumber, he developed dermatitis. To establish her claim for compensation for his death, the widow claimed that cedar poisoning constituted an accident under the workmen's compensation act, the inference being that the dermatitis due to such poisoning led to the scratches on her husband's chin, and that the diffuse acute mediastinitis, or blood poisoning, from which he died was the consequence. The accident board denied her claim. The district court reversed that action, but on appeal the supreme court of Idaho reversed the judgment of the court below, and compensation was thereby denied. Whether cedar poisoning may or may not be said to be, under any circumstances whatever, a personal injury by accident, the supreme court found it unnecessary to determine. With respect to a person, however, who knew that he was susceptible to such poisoning, an attack could hardly be said to be an unlooked-for mishap or untoward event, and therefore it could not be said to be an accident within the meaning of the workmen's compensation act. —*Reuder v. Milwaukee Lumber Co. et al. (Idaho), 275 P. 1114.*

Privileged Communications: Examination of Accused in Rape Case.—The defendant was accused of rape. He, without voicing dissent, submitted to a physical examination to determine whether he had gonorrhea, but at the trial he objected to the admission of the examining physician's testimony. The supreme court of Arizona held that, since the accused willingly acquiesced in the examination, the admission of the testimony did not violate the constitutional guaranty that a defendant cannot be compelled to give testimony against himself, and that since the object of the examination was to determine whether the accused had gonorrhea, and not for the purpose of prescribing for him or treating him for the disease, the testimony was not inadmissible as a privileged communication.—*Garcia v. State (Ariz.), 274 P. 166.*

Evidence: Hospital Records Not Conclusive as to All Entries.—A plaintiff who introduces hospital records in evidence is not bound by the entries therein so far as they are contrary to the implications of his own testimony and to the other evidence.—*Newman v. Levinson (Mass.), 165 N. E. 122.*

1. It is unsafe for a physician to examine, operate on or treat a minor child without the implied or actual consent of a parent, if action by the parent can be awaited without danger to the child.

Society Proceedings

COMING MEETINGS

American Academy of Physical Therapy, Philadelphia, December 5-6. Dr. Thomas L. Smyth, 111 North Eighth Street, Allentown, Pa., Sec'y.

American Association of Railway Surgeons, Chicago, November 6-8. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American College of Physical Therapy, Chicago, November 4-7. Dr. F. L. Wahrer, 22 South Center Street, Marshalltown, Iowa, Secretary.

American Society of Tropical Medicine, Miami, Fla., November 20-22. Dr. Edwin Peterson, U. S. Naval Hospital, Washington, D. C., Sec'y.

Association of American Medical Colleges, New York, Nov. 7-9. Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Medical and Surgical Association of the Southwest, Phoenix, Ariz., November 7-9. Dr. W. Warner Watkins, P. O. Box 1587, Phoenix, Secretary.

Radiological Society of North America, Toronto, December 2-6. Dr. I. S. Trostler, 25 East Washington Street, Chicago, Acting Secretary.

Southern Medical Association, Miami, Fla., November 20-22. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Atlanta, Ga., December 10-12. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Western Surgical Association, Del Monte, Calif., December 12-14. Dr. Frank R. Teachenor, 306 E. Twelfth St., Kansas City, Mo., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Dis. of Children, Chicago

38: 451-682 (Sept.) 1929

*Epilepsy in Children. I. McQuarrie, Rochester, N. Y.—p. 451.
*Metabolism of Undernourished Children: VIII. Effect of High and Low Protein Diets on Excretion of Creatine, Creatinine and Ammonia. C. C. Wang and M. Kaucher, Chicago.—p. 468.
*Id.: IX. Study of Basal Metabolism, Caloric Balance and Protein Metabolism During Period of Gain in Weight. C. C. Wang, R. Kern and M. Kaucher, Chicago.—p. 476.
*Rickets in Chicks: IV. Effect of Heat and Exposure to Air on Stability of Vitamin D. G. F. Heuser and L. C. Norris, Ithaca, N. Y.—p. 481.
*Blood Cholesterol in Diabetic Children. G. L. Boyd, Toronto, Canada. —p. 490.
*Growth of Infants from Standpoint of Physical Measurements and Nitrogen Metabolism: II. Creatine. A. L. Daniels and L. M. Hejinian, Iowa City.—p. 499.
*Id. III. Uric Acid. A. L. Daniels and L. M. Hejinian, Iowa City. —p. 507.
*Influence of Ultraviolet Rays, Yeast and Irradiated Yeast on Sugar Tolerance of Diabetic Children. H. G. Grayzel, W. S. Collens and M. R. McKenzie, New York.—p. 513.
Relationship of Jaundice and Weight to Blood Values in New-Born Infant. J. M. Mitchell, Bryn Mawr, Pa.—p. 518.
*Tuberculosis in Infants Under One Year of Age. K. Merritt, New York.—p. 526.
Physical Traits of Young Children. Iowa Child Welfare Research Station, Iowa City.—p. 541.
Polymorphonuclear Count in New-Born: II. Deflection by Ultraviolet Light. H. N. Sanford, Chicago.—p. 547.
Paroxysmal Tachycardia with Syncope Occurring in Child. F. A. Willius and S. Amberg, Rochester, Minn.—p. 551.
Imperforate Anus with Exit Through Prostatic Urethra: Three Cases. F. C. Helwig, Kansas City, Mo.—p. 559.
Ectopia Cordis. A. M. Wedd, Clifton Springs, N. Y.—p. 562.
Acute Mastoiditis in Infant Aged Eight Weeks. H. B. Silver, Newark, N. J.—p. 567.
Constipation and Behavior. I. S. Wile, New York.—p. 570.
John Mayow, 1643-1679. J. Ruhräh, Baltimore.—p. 590.

Epilepsy in Children.—The superficial relationship between water balance and the occurrence of seizures has been determined by McQuarrie under various conditions in a number of epileptic children. There appears to be a tendency for the epileptic subject to retain water during the active phase of the disease in amounts that are harmful. Convulsions tend to occur when a positive water balance above a certain magnitude is established. When diuresis follows the seizure, it favors the prevention of further seizures temporarily. Whether or not this effect of the extra water is due solely to changes within the brain cannot be said as yet. Procedures, such as fasting, the use of ketogenic diets and stringent restriction of water with nonketogenic, borderline diets, lead to partial dehydration of the tissues and prevention of seizures. Suddenly increasing the intake of water during the course of treatment by dehydration tends to cause recurrence of seizures, at least in the severe cases. Parenteral administration of solution of pituitary, or of the antidiuretic hormone of the hypophysis, causes the development of a positive water balance and the occurrence of seizures in the epileptic subject. Urea in large doses causes loss of the retained water. Possible underlying etiologic factors in the disease are discussed in the light of these observations. A disturbance in water balance, perhaps affecting the central nervous system more specifically, appears to be closely identified with the etiology of epilepsy. The general principles of a rational therapeutic regimen based on experimental data and clinical experience are described. Additional work in progress is outlined.

Effect of High and Low Protein Diets on Excretion of Creatine, Creatinine and Ammonia.—The excretion of creatine, creatinine and ammonia of ten undernourished children per kilogram of body weight was determined by Wang and Kaucher and found to be slightly higher than that of children of normal weight. This is believed to be due in part to a larger proportion of muscular tissue in the bodies of the underweight children. The higher creatine output is undoubtedly due in part to the slight increase computed per kilogram of body weight of protein intake in the undernourished children. The slight increase in the excretion of creatinine is probably due to the difference in age in the two groups, since this compound is independent of protein intake. The increased production and excretion of organic acid in the undernourished children may account for the higher excretion of ammonia. The creatine output of both normal and underweight children is directly proportional to the nitrogen intake. The ratio $\frac{\text{creatine } N}{\text{total } N \text{ output}} \times 100$ is fairly constant. Hence, there is constant relationship between protein intake and creatine output. The creatinine output in such children is dependent on body weight and is independent of protein intake. It is constant when computed per kilogram of body weight. No abnormality in the elimination of the waste products, creatine, creatinine and ammonia was found in undernourished children.

Study of Basal Metabolism, Caloric Balance and Protein Metabolism During Period of Gain in Weight.—The basal metabolism, the caloric exchange and the nitrogen metabolism of twelve undernourished children were studied by Wang et al. at intervals as they were gaining in weight. The results confirm their observations on different children of varying degrees of underweight; namely, (1) that the basal metabolism of undernourished children is apparently normal, (2) that the absorptive power of undernourished children is equal to that of normal children, and (3) that the retention of nitrogen in undernourished children is greater than that in children of normal weight, and, as these children approach normal weight, that the retention of nitrogen decreases.

Effect of Heat and Exposure to Air on Stability of Vitamin D.—Rate of growth, development of rachitic lameness, beading of the ribs and determination of the ash, calcium and phosphorus in the bones of the legs of white leghorn chicks were used by Heuser and Norris as a means of determining the resistance of vitamin D of cod liver oil to oxidation at the temperature of boiling water by means of carbon dioxide-free, moisture-free air. The results indicate that vitamin D is not a stable vitamin when heated and exposed to air, and substantiate in this respect the conclusions of Goldblatt and Zilva.

Blood Cholesterol in Diabetic Children.—Hypercholesteremia is present in only a small proportion of the ninety diabetic children studied by Boyd. Hypercholesteremia and lipemia are not necessarily associated in the same case. When the lipemia is chronic, the plasma cholesterol tends to rise. The increase and decrease of blood cholesterol in severe lipemia are slower than the rise and fall of the blood fat. The blood cholesterol remains nearly constant in the same subject. Patients with clinically severe acidosis or a severe grade of ketonuria usually have an increased blood cholesterol, but the magnitude of this increase is usually less than that of the blood fat. The height of the plasma cholesterol and its degree of turbidity showed no relationship to each other. There is a tendency toward hypercholesteremia in severe grades of malnutrition. The plasma cholesterol bears no relationship to the amount of fat ingested. The plasma cholesterol and the blood sugar bear no constant relationship to each other, but high fasting blood sugars are associated with higher maximum and average cholesterol values. High blood cholesterol is usually found in cases of hydremia. Hypercholesteremia usually indicates diabetes sufficiently severe to require insulin in the treatment, but low plasma cholesterol does not necessarily indicate that the case is mild. The height of the blood cholesterol is not directly proportional to the amount of insulin required. Hypercholesteremia is not incompatible with improving tolerance but is more often seen in patients not treated with insulin who are progressing favorably than in those treated with insulin who are pursuing a similar course.

Growth of Infants from Standpoint of Physical Measurements and Nitrogen Metabolism.—In a series of studies made by Daniels and Hejinian of the metabolism of eleven normal infants receiving artificial feedings of modifica-

tions of cow's milk, it was observed that the amount of creatine excreted bore no relation to age, to development of muscle, as indicated by the amounts of creatinine eliminated, or to volume of urine. The food intake was so controlled that the factor of possible depletion of carbohydrate was excluded. The results of the investigation seem to indicate that the creatinuria of infancy is related to the ingestion of protein. An increase in the urinary nitrogen, in general, was coexistent with an increase in the urinary creatine. It is suggested that creatine is an end-product in the catabolism of certain precursors in the protein molecule, and bears no relation to the urinary creatinine, which is an end-product of muscle metabolism.

Id.—In a series of metabolic studies made by Daniels and Hejinian of three normal infants, it was found that, although the elimination of uric acid increased with increasing age, there was no close relationship between the excretion of urinary creatinine and that of uric acid; nor was there any apparent relation between the ingestion of protein and the excretion of uric acid, which averaged 12, 10.9 and 12.7 mg. per kilogram for the three infants under observation. With these infants there appeared to be a closer correlation between height and the amount of uric acid excreted than between weight and the amount of uric acid excreted.

Influence of Ultraviolet Rays, Yeast and Irradiated Yeast on Sugar Tolerance of Diabetic Children.—Ultraviolet rays, yeast vitamin B and irradiated yeast, when administered by Grayzel et al. over a period of from four to seven weeks, fail to produce any significant improvement in the sugar tolerance of children with diabetes.

Tuberculosis in Infants Under One Year of Age.—Seventy-five cases of tuberculosis in infants under 1 year of age were analyzed by Merritt. The pathologic study shows the high incidence of involvement of the tracheobronchial glands, of severe involvement of the lungs with formation of cavities, of intestinal ulceration and of meningitis. The degree of involvement and the rapidity with which it takes place are striking. The Mantoux test is of great diagnostic value in cases of tuberculosis in infants. The x-rays have little practical value in the accurate diagnosis of involvement of the lungs.

American J. Physical Anthropology, Philadelphia

13: 177-357 (July-Sept.) 1929

Study of Age Correlations of Cuticular Scales, Medullas and Shaft Diameters of Human Head Hair. E. M. Wynkoop, New Brunswick, N. J.—p. 177.
One Hundred Measurements and Observations on One Hundred Smith College Students. M. Steggerda, J. Crane and M. D. Steele, Northampton, Mass.—p. 189.
Epicanthus or Mongolian Fold in Caucasian Children. K. S. Chouke, Denver.—p. 255.
Measuring-Board for Infants. H. Thompson, New Haven, Conn.—p. 281.
Stem-Length: Recumbent-Length Ratio as Index of Body Type in Young Children. L. Hejinian and E. Hatt, Detroit.—p. 287.
South African Negro. R. A. Dart, Johannesburg, S. Africa.—p. 309.
Facial Height as Criterion of Race. J. Cameron, Halifax, Nova Scotia. —p. 319.
Facial Width as Criterion of Race. J. Cameron, Halifax, Nova Scotia. —p. 335.
Upper Facial Index in Diverse Racial Types of Mankind. J. Cameron, Halifax, Nova Scotia.—p. 344.
Trephined Indian Skull from Georgia. C. B. Cosgrove, Boston.—p. 353.

American J. Roentgenol. & Rad. Therapy, New York

22: 207-304 (Sept.) 1929

*Etiology of Ill Health of Children Born after Maternal Pelvic Irradiation. D. P. Murphy and L. Goldstein, Philadelphia.—p. 207.
*Late Effects of Treatment of Thymus. J. M. Barnes, Ann Arbor, Mich. —p. 220.
Pulmonary Tuberculosis of Infants and Children. R. G. Karshner, Los Angeles.—p. 226.
Fibrin Body in Pneumothorax Cavity. H. C. Ballon, St. Louis.—p. 234.
Significance of Gas Under Right Dome of Diaphragm. E. P. Pendergrass and E. Kirk, Philadelphia.—p. 238.
Roentgenologic Study of Colon in Child with Spinal Cord Lesion. H. C. McIntosh, New York.—p. 247.
*Method for Direct Visualization of Lesions in Small Intestines. G. S. Pesquera, Mount McGregor, N. Y.—p. 254.
Diverticulum of Stomach: Case. E. N. Liljedahl, Los Angeles.—p. 258.
Prenatal Diagnosis of Anencephaly with Spina Bifida. A. T. Harris, Hastings, Neb.—p. 259.

Etiology of Ill Health of Children Born After Maternal Pelvic Irradiation.—The various maternal influences and other factors underlying the cause of the ill health of forty-six children born after preconception pelvic roentgen or radium therapy have been investigated by Murphy and Goldstein. The probable causative factors in the production of the ill health were ascertained in twenty-four, or 52 per cent, of the children, whereas in the remaining twenty-two children they remained undetermined. The latter group formed only 5 per cent of the entire group of 417 children born after preconception pelvic irradiation. In this small group of twenty-two children there were only seven who exhibited gross anatomic defects. Whether the irradiation played any part in the causation of these defects could not be learned. The infant mortality rate for the children born after irradiation was considerably lower than the mortality rate for the United States; hence the infant mortality rate was apparently not influenced by the irradiation. The ill health of twenty-four of the forty-six unhealthy children born after preconception irradiation was attributed to such influence as the following: Six cases of child health disturbances were found to be due to maternal ill health prior to irradiation or during pregnancy. The ill health of thirteen children was believed to have been the result of complications incident to delivery or of prematurity. In three cases the ill health was believed to be the result of accidental causes. Two unhealthy children later became healthy.

Late Effects of Treatment of Thymus.—A study made by Barnes of sixty-three children who received treatment of the thymus from 3½ to 8 years ago failed to demonstrate any constant deviation from normal, in either the physical or the mental sphere, which might be attributed to the treatment.

Method for Direct Visualization of Lesions in Small Intestine.—The following method has been adopted by Pesquera in making studies of the small bowel: A duodenal tube is swallowed by the patient and allowed to pass into the duodenum in the same manner as in the study of the gallbladder and duodenum. The mixture of barium, acacia and water is then permitted to flow slowly under gravity through the tube. Under the roentgenoscopic screen, the rate of the flow of the menstruum can be completely controlled. The motility of the advancing column, the peristalsis, the contour of the intestinal coils, their freedom under the palpating hand, spasticities, deformities or other abnormalities can be accurately observed. Plates can be made at any time during the examination whenever the operator deems it advisable. The entire small bowel can be studied in less than half an hour.

American J. Surgery, New York

7: 293-450 (Sept.) 1929

*Newer Conception of Wound Healing as Applied to Practical Surgery. A. E. Hertzler, Halstead, Kan.—p. 293.
Etiology of Goiter. M. O. Shivers, Colorado Springs, Colo.—p. 301.
Interchangeable Types of Goiter. J. W. Hinton, New York.—p. 313.
Hypothyroidism. D. L. Sexton, St. Louis.—p. 319.
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*Occurrence of Asthma in Patients Manifesting Evidences of Thyroid Dysfunction. C. A. Elliott, Chicago.—p. 333.
Effect of Iodine and Thyroid Feeding on Histology of Gland of Dog. W. B. Mosser, Kane, Pa.—p. 338.
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Pathologic Consequences of Congenitally Ptosed Right Colon. K. H. Aynesworth, Waco, Texas.—p. 358.
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Radiohumeral Bursitis (Tennis Elbow): Two Cases. R. J. Dittrich, Wichita, Kan.—p. 411.
Spontaneous Nontuberculous Pneumothorax. J. Browder, New York. —p. 415.
Echinococcus Cysts of Kidney. M. Meltzer, New York.—p. 418.
Surgical Polycystic Kidney. M. Meltzer, New York.—p. 420.
Multiple Lithiasis of Prostate. V. C. Pedersen, New York.—p. 423.
Ectopic Kidney. C. W. Collings, New York.—p. 425.

Newer Conception of Wound Healing; Practical Surgery.—Hertzler states that primary wound healing occurs by the coagulation of exudate forming a fibrillar fibrin which is converted into adult connective tissue by a chemical process.

Wound healing is prevented when the exudate forms a granular fibrin. This may be due to infection or to the presence of some chemical inimical to the formation of fibrillar fibrin. Healing of muscle to fascia is dependent on the production of a myositis which results in the production of fibrous tissue. Secondary hemorrhage and emboli result when the vessel wall is so irritated by chemical means that a fibrosing thrombus is not formed.

Occurrence of Asthma in Patients Manifesting Evidences of Thyroid Dysfunction. — Elliott suggests that a physiologic relationship may exist between asthma and hyperthyroidism. Their coexistence may be merely casual. The fact that but six patients thus afflicted have been seen by Elliott in eleven years would tend to support this view. Since two of these patients have been definitely relieved of asthma and hyperthyroidism by thyroidectomy and clearing up of definite focal infections, such a procedure seems warranted as a method of treatment.

American J. Tropical Medicine, Baltimore

9: 277-412 (Sept.) 1929

Technic and Results of Complement Fixation Test for Diagnosis of Infections with Endamoeba Histolytica. C. F. Craig, Washington, D. C.—p. 277.
*Amebiasis in New York City. L. F. Bishop and L. F. Bishop, Jr., New York.—p. 297.
Malaria Survey of Island of Jamaica, B. W. I. M. F. Boyd and F. W. Aris, New York.—p. 309.
*Treatment of Blackwater Fever with Neoarsphenamine. E. C. Cort, Chiengmai, Siam.—p. 401.

Amebiasis in New York City.—The Bishops found that the frequency of endemic amebiasis in New York City is probably far greater than is commonly supposed. They feel that a great deal more attention should be paid to the detection of carriers of *Endameba histolytica* by thorough microscopic examination of the feces and that the technic of such examinations be rigidly carried out.

Treatment of Blackwater Fever with Neoarsphenamine.—In addition to neoarsphenamine, Cort says that all patients receive immediately 500 cc. of a 2 per cent solution of sodium bicarbonate by hypodermoclysis or intramuscularly and, after a cleansing enema, which is of itself important, a liter of physiologic solution of sodium chloride by enteroclysis. If this is being absorbed, he waits for a couple of hours and then gives from 500 to 1,000 cc. of physiologic solution of sodium chloride by hypodermoclysis, but if not absorbing, the injection is given at once. Thereafter, 500 cc. of salt solution and of sodium bicarbonate solution are given alternatively every three or four hours by hypodermoclysis or enteroclysis, or both. Meantime steps have been taken to control temperature by hydrotherapy. The bathing must be thorough but chill must be avoided, and for this reason cold water is never used. Vomiting is controlled by ice bag, ice in the mouth, or small doses of morphine and scopolamine. Caffeine, from 2 to 4 grains (0.13 to 0.26 Gm.), is given at once, and then once or twice daily, with digitalis as needed. The diet is fluid, orange juice or orange albumins alternating with milk, every two hours; and fluids, water and lemonade are pushed by mouth to the patient's capacity to retain them. The mortality in a series of twenty-six cases was nil. There were two relapses.

Annals of Surgery, Philadelphia

90: 321-480 (Sept.) 1929

*Fracture Dislocation of Cervical Spine. A. S. Taylor, New York.—p. 321.
Impaired Shoulder Function and Methods of Treatment. D. Gordon, New York.—p. 341.
*Injuries to Abdominal Viscera. J. W. Hinton, New York.—p. 351.
Acute Pancreatitis. W. Linder and L. J. Morse, New York.—p. 357.
Review of Operations Done on Gallbladder and Ducts. J. H. Gibbon, Philadelphia.—p. 367.
*Surgical Conditions of Biliary Tract. F. H. Lahey, Boston.—p. 373.
*Mortality of Enterostomy in Acute Ileus. F. T. Van Beuren, Jr., New York.—p. 387.
*Ileus Following Rib Fracture. F. Christopher, Winnetka, Ill.—p. 394.
Von Recklinghausen's Disease. P. C. Potter and J. E. McWhorter, New York.—p. 397.
Hemiresection of Solitary Kidney. T. N. Hepburn, Hartford, Conn.—p. 402.
*Rectal Anesthesia with Tribromethylalcohol. J. R. Guttman, Chicago.—p. 407.
*Incidence of Hypo-Acidity in Cholelithiasis and Cholecystitis. H. Akaiwa and D. M. Sugano, Fukuoka, Japan.—p. 415.
Surgery in Breast Tumors: Problems Concerning Diagnosis and Treatment. E. J. Klopp, Philadelphia.—p. 424.

Fracture Dislocation of Cervical Spine.—The principle of the method of treatment advocated by Taylor consists in controlled traction exerted on the head (with countertraction on the lower extremities) until the spasmodically contracted cervical muscles have relaxed sufficiently to permit reduction by bimanual manipulation on the part of the operator. Fixation is maintained by a plaster jacket involving the trunk and neck, the neck portion maintaining extension of the neck by pressure upward against the occiput and inferior maxilla, and downward against the shoulders.

Injuries to Abdominal Viscera.—Hinton says that cases of retroperitoneal hemorrhage may simulate intra-abdominal injury, but, with the aid of the history and the location of the injury, the diagnosis should be made. These patients, of course, should never be operated on. In cases of intra-abdominal hemorrhage, if the hemorrhage is due to a ruptured liver, conservative treatment should be followed, and in cases of rupture of the spleen the patient should be observed and treated for shock, and operated on only if there are signs of continuous bleeding. In cases of rupture of a hollow viscus, immediate surgical intervention is essential, but a laparotomy should not be made unless one is certain of the diagnosis, as an exploratory laparotomy does not serve the patient's best interest.

Surgical Conditions of Biliary Tract.—In cases of noncalculous chronic cholecystitis, Lahey says that the removal of the gallbladder may be justifiably advised when adequate investigation has failed to reveal conditions other than cholecystitis as the cause of the symptoms; when medical measures have failed to relieve the condition; when cholecystography shows evidences of an abnormal gallbladder, and when the symptoms are of sufficient magnitude to make surgery worth considering. There are no harmless gallstones. The diagnosis of gallstones should be made as early in the disease as possible and operation undertaken as early as possible to avoid the undesirable results of long-standing cholelithiasis. Strictures of the main bile ducts most commonly follow operative injuries and can for the most part be repaired by a plastic operation on the duct. Courvoisier's law as modified has been of great help in the matter of a decision for or against operation in cases of painless and persisting jaundice.

Mortality of Enterostomy in Acute Ileus.—Van Beuren asserts that there is statistical evidence to indicate that enterostomy is of value in the treatment of acute ileus.

Ileus Following Rib Fracture. — Christopher adds one case to four others already recorded. The symptoms of all cases were similar: cessation of bowel movements, increasing distention, and vomiting. A preoperative diagnosis of intestinal obstruction was made in four cases; in one, mesenteric thrombosis. Four patients recovered and one died. Laparotomy was done in all cases. In three cases, enterostomy was done and all recovered. In the two cases in which enterostomy was omitted, one patient (the author's) recovered and one died.

Rectal Anesthesia with Tribromethylalcohol.—Guttman asserts that tribromethylalcohol anesthesia approaches the ideal anesthetic more closely than any other. It has its drawbacks; namely, its labile chemical constitution that admits of its decomposition with the production of the highly irritant dibromacetalydehyde, and its rapid absorption from the intestinal tract that may permit the flooding of the patient with a toxic dose that cannot be removed. These disadvantages can be obviated by care in the administration of a properly calculated dose with close attention to its preparation—in not overheating the solution. Its advantages are manifold: the peaceful induction in the patient's own room, the ease with which surgical procedures about the head and neck may be carried out without the embarrassment caused by the administration of an inhalation anesthetic, the restful postoperative awakening without nausea, vomiting, headache or depression, and the lack of pulmonary or cardiac complications.

Incidence of Hypo-Acidity in Cholelithiasis and Cholecystitis.—In forty-one cases of cholelithiasis and cholecystitis examined by Akaiwa and Sugano, hypo-acidity was present in

thirty-one. With a stone in the common duct, the acidity is lower than in cholecystitis and there is more anacidity than in the latter condition. From the postoperative results in these cases it was not evident that hypo-acidity or anacidity has any direct relation to the changes in the gallbladder or cystic duct or any disturbance in their function; especially after operation, there was no significant change. The gastric acidity in cholelithiasis seems to be the result of bacterial infection of the bile. The authors believe that the decrease in acid was present before the occurrence of gallstones and so favored the ascent of the bacteria up the intestinal canal, giving opportunity for biliary duct infection. As soon as this infection accompanied the cholecystitis and cholelithiasis there was a further deficiency in acid due to such factors as fever, chills and vomiting, which influence the gastric secretion, which increased in severity and finally led to gastritis chronica anacida. Therefore, they cannot agree with the assertion that cholelithiasis is primary and the hypo-acidity or anacidity secondary. They hold to the view that, after the inception of cholecystitis and cholelithiasis, hypo-acidity or anacidity and bacterial infection, which stand in close relation to the two conditions mentioned, favor the progress of these diseases. The measurement of gastric acidity in cholecystitis and cholelithiasis is an important diagnostic method and also serves as a means for judging the extent of the disease.

Archives of Pathology, Chicago

8: 371-574 (Sept.) 1929

So-Called Small Round Cell Infiltrations: II. Syphilis of Central Nervous System. N. A. Michels, Omaha and J. H. Globus, New York.—p. 371.
Immune Cellular Reactions in Experimental Acute Peritonitis. B. Steinberg and D. A. Snyder, Toledo, Ohio.—p. 419.
*Pathologic Anatomy in Twenty-Eight Cases of Addison's Disease. N. W. Barker, Rochester, Minn.—p. 432.
*Late Gross Lesions in Aorta and Pulmonary Artery Following Rheumatic Fever. S. H. Gray, Denver, and L. Aitken, St. Louis.—p. 451.
Rôle of Clasmatocytes in Protection Against Pneumococcus. A. R. Clark, New York.—p. 464.
Estimation of Hemoglobin by Cell Concentration. J. Felsen, New York.—p. 484.
Simple Method for Isolation of Anaerobic Bacteria. T. Wenzel, Nashville, Tenn.—p. 487.
Reticulo-Endothelial System in Protozoan Infections. R. W. Linton, New York.—p. 488.

Pathologic Anatomy in Addison's Disease.—Necropsy data are presented by Barker from twenty-eight cases of Addison's disease. Among these there was bilateral tuberculosis of the suprarenal glands in twenty-five; acid-fast bacilli were demonstrated in eleven. There was advanced bilateral suprarenal atrophy in three cases. In all the cases but one some suprarenal tissue remained; the maximal amount remaining in any case was approximately 10 per cent of the normal. Healed tuberculous lesions of the lungs were found in all the cases in which there was tuberculosis of the suprarenal glands. Active tuberculosis of other organs was found in twenty-two of these. The weight of the heart was less than the average normal in fourteen of twenty cases in which data on the weight of the heart were available. Diffuse degenerative changes in the renal tubules were present in nine cases. In ten cases, including the three cases of suprarenal atrophy, the thymus was enlarged and there was hyperplasia of lymphoid tissue in the nodes and intestinal tract. There was scattered lymphoid hyperplasia in eight other cases. Seventy-three cases in which there were suprarenal lesions but in which clinical evidence of Addison's disease was lacking are briefly presented. Among these seventy-three cases are included: primary suprarenal neoplasms, fifteen cases; secondary suprarenal neoplasms, thirty-nine cases; atrophy, two cases; amyloidosis, three cases; infarction, two cases, hemorrhage, three cases; abscess, one case, and tuberculosis, eight cases.

Late Gross Lesions in Aorta and Pulmonary Artery Following Rheumatic Fever.—Four cases are described by Gray and Aitken in which gross lesions of the aorta and pulmonary artery are thought to have been late results of rheumatic changes. These lesions consisted in scarring of the media and thickening of the intima. A false aneurysm of the aorta is described and explained on a rheumatic basis. An eccentric fibrosis of the veins of the adventitia is emphasized as being rheumatic.

Archives of Phys. Therapy, X-Ray, Radium, Omaha

10: 385-432 (Sept.) 1929

Physical Therapy in Infantile Paralysis. J. A. Key, St. Louis.—p. 385.
Physical Measures in Treatment of Pain. R. J. Behan, Pittsburgh.—p. 390.
Ionic Medication. F. H. Morse, Boston.—p. 397.
Roentgen Negatives of Maximum Detail and Contrast. R. A. Watters and C. E. Piersall, Reno, Nev.—p. 402.
Prostatitis: Treatment by Diathermy. O. Grant, Louisville, Ky.—p. 408.
Ultraviolet Irradiations in Hyperemesis Gravidarum. H. D. Holman, Mason City, Iowa.—p. 411.
Electrosurgery. E. N. Kime, Indianapolis.—p. 415.

Indiana State M. Assn. Journal, Fort Wayne

22: 349-420 (Sept. 15) 1929

Roentgenogram Diagnosis of Advanced Abdominal Pregnancy. A. M. Mendenhall, Indianapolis.—p. 349.
Tuberculosis Therapy. T. J. Beasley, Indianapolis.—p. 351.
Cancer of Cervix Uteri. F. C. Walker, Indianapolis.—p. 352.
Puerperal Fever. W. Moore, New Albany.—p. 356.
Cancer of Rectum. R. C. Ottinger, Indianapolis.—p. 359.

Iowa State M. Soc. Journal, Des Moines

19: 393-436 (Sept.) 1929

Medical Economics. C. G. Smith, Granger.—p. 393.
Varicose Veins. H. O. McPheeters, Minneapolis.—p. 398.
Physicochemical Factors, Diagnosis and Treatment of Acidosis and Alkalosis. C. M. Porter, Woodward.—p. 401.
Mastoiditis in Infants. D. M. Lierle, Iowa City.—p. 406.
Large Ovarian Cyst: Case. F. R. Sparks, Waverly.—p. 414.

Journal of Cancer Research, Lancaster, Pa.

13: 207-312 (Oct.) 1929

Occurrence of True Mixed Carcinomatous and Sarcomatous Tumors (Sarcocarcinoma); Mixed Carcinoma-Chondrosarcoma of Thyroid of Dog. R. Mason and H. G. Wells, Chicago.—p. 207.
Entdifferentiation in Primary Carcinoma of Bronchi and Lungs. C. V. Weller, Ann Arbor, Mich.—p. 218.
No Lead in Tumor Tissue After Intravenous Injection of Colloidal Lead. M. C. Reinhard and K. W. Buchwald, Buffalo, N. Y.—p. 239.
Colloids as Regulators of Division Energy of Cells. G. L. Rohdenburg, New York.—p. 242.
*Histologic Findings in Hearts Which Have Been Exposed to Radiation in Course of Treatment of Adjacent Organs. A. A. Thibaudeau and W. L. Mattick.—p. 251.
Carcinoma of Cervix Uteri. A. A. Thibaudeau and E. M. Burke.—p. 260.
Lactic Acid Formation in Tumor Tissue. H. R. Downes, New York.—p. 268.
Failure of Spleen from Tumor-Bearing Animals to Produce Tumors. W. H. Woglom, New York.—p. 305.

Microscopic Examination of Hearts Exposed to Radiation in Course of Treatment of Adjacent Organs.—It would seem that irradiation of the human heart as used in the treatment of malignant neoplasms in its immediate vicinity may cause definite injury to the heart muscle. The pathologic picture in the cases studied by Thibaudeau and Mattick varied from slight interstitial fibrosis to hyaline and fatty degeneration of the muscle fibers with necrosis.

Journal of Comparative Neurology, Philadelphia

48: 227-353 (Aug. 15) 1929.

Relation of Level of Transection of Brain-Stem to Occurrence of Decerebrate Rigidity in Young Animals. W. F. Windle, Chicago.—p. 227.
Innervation of Blood Vessels of Medulla and Spinal Cord. S. L. Clark, Chicago.—p. 247.
Tracts and Centers in Pigeon Dominating Associated Movements of Eyes (and Other Movable Parts) in Sense of Lateral Deviation in Horizontal and Rotation in Frontal Plane. L. J. J. Muskens, Amsterdam.—p. 267.
Structure of Cells in Tissues as Revealed by Microdissection: III. Sheaths of Myelinated Nerve Fibers of Frog. G. St. de Rényi, Philadelphia.—p. 293.
Experiments on Transplantation of Placodes of Cranial Ganglia in Amphibian Embryo: IV. Heterotopic Transplantations of Postauditory Placodal Material on Head and Body of Amblystoma Punctatum. L. S. Stone, New Haven, Conn.—p. 311.
Effect of Experimental Excision of One Eye on Development of Optic Lobe and Opticus Layer in Larvae of Tree-Frog (Hyla Regilla). O. Larsell, Portland, Ore.—p. 331.

Journal of Infectious Diseases, Chicago

45: 163-246 (Sept.) 1929

Hydrolyzed Serum Agar for Isolation of Corynebacterium Diphtheriae. L. Thompson, Rochester, Minn.—p. 163.
Skin Tests with Filtrates and Vaccines of Staphylococcus Aureus. M. L. Afremow and I. Pilot, Chicago.—p. 167.
Simple Method of Making Culture of Rectum. E. F. Traut and R. D. Herrold, Chicago.—p. 172.
Preparalytic Poliomyelitis. W. Aycock, E. H. Luther, C. F. McKhann, E. C. Smith and S. D. Kramer, Boston.—p. 175.

Fatal Infection of Chicks Due to Bacilli of Paratyphoid B Group. P. R. Edwards, Lexington, Ky.—p. 191.
Antigen for Kahn Test: IV. Properties of Sensitized Antigen. G. Lubin, R. L. Kahn and M. B. Kurtz, Ann Arbor, Mich.—p. 196.
Bacteria Isolated from Infections of Nasal Cavities and Middle Ear of Rats Deprived of Vitamin A. R. G. Turner, Detroit.—p. 208.
Carbohydrate Fermentation, Nitrogenous Metabolism and Catalase Production by Variants of B. Anthracis. W. J. Nungester, Chicago.—p. 214.
*Precipitation Test for Syphilis. E. Weiss, Chicago.—p. 225.
Preparation of Meningococcus Toxic Substances Necessary for Phenomenon of Local Skin Reactivity. G. Shwartzman, New York.—p. 232.
*Dissociation of Diplococcus from Measles. R. Tunnicliff, Chicago.—p. 235.
Use of Paramecia for Studying Toxic Substances in Urine. R. Tunnicliff, Chicago.—p. 244.

Precipitation Test for Syphilis.—Weiss has developed a test by applying Kahn's principle of concentration to a more simple and accurate procedure. In the new method the diluted antigen is ready for immediate use; in Kahn's method at least ten minutes must elapse between the dilution and the use of the antigen. The proposed test uses larger quantities of antigen and serum, which can be mixed more thoroughly within a few seconds' time, while Kahn's method requires two or three minutes. Larger amounts of saline are added to the antigen serum mixture after incubation, thus facilitating the reading. The new routine procedure uses only one tube for the main test, while Kahn uses three tubes. The three tubes in Kahn's test do not give more information about the negative serum than does the one tube in the new procedure. One tube in this procedure suffices to detect a weak positive serum, while Kahn requires three tubes for the same purpose. The reading of the results in Kahn's method is not definite, since different individuals may give a varying interpretation as to the degrees of positiveness. The manner of reading results is well defined in the new method and differences in interpretation cannot develop. The routine procedure in the new test determines the positiveness or negativeness of a serum, and the quantitative procedure gives the degree of positiveness.

Dissociation of Diplococcus from Measles.—As a result of aging strains of measles diplococci, Tunnicliff has obtained two additional culture types. The work is described in detail.

Kansas M. Soc. Journal, Topeka

30: 285-322 (Sept.) 1929

Ketogenic Diet in Treatment of Chronic Convulsive States. W. C. Menninger, Topeka.—p. 285.
Diagnosis of Gallstones. W. J. Walker, Topeka.—p. 288.
Pernicious Anemia: Primary or Addison's Anemia. F. J. McEwen, Wichita.—p. 291.
Diagnostic Relation of Roentgen Findings to Physical Signs. F. C. Neff, Kansas City, Mo.—p. 295.
Agranulocytic Angina. J. L. Lattimore, Topeka.—p. 298.

Laryngoscope, St. Louis

39: 555-626 (Sept.) 1929

Chronic Deafness: Endocrine Study of One Thousand Case Histories. D. W. Drury, Boston.—p. 555.
Intracranial Complications Following Sphenoid Infection. R. Kramer, New York.—p. 573.
Upper Respiratory Therapy in Persistent Hiccup. V. K. Hart and J. P. Matheson, Charlotte, N. C.—p. 588.
Window Operation for Hematoma Auris and Perichondritis with Effusion. R. C. Howard, New York.—p. 590.
Demonstration of Intratracheal Anesthesia and New Method of Resuscitation. P. J. Flagg, New York.—p. 594.
Relation Between Thyrotoxicosis and Tonsillar Infection. L. E. Brown, Akron, Ohio.—p. 598.
Refinement in Technic of Intrabronchial Injections. M. S. Lloyd, Staten Island, N. Y.—p. 607.

Pennsylvania M. Journal, Harrisburg

32: 827-945 (Sept.) 1929

Surgery in Treatment of Pulmonary Tuberculosis. J. B. Flick, Philadelphia.—p. 855.
Selection of Cases of Chronic Pulmonary Tuberculosis Suitable for Collapse Therapy. E. H. Funk, Philadelphia.—p. 859.
Value of Artificial Pneumothorax. A. J. Cohen, Philadelphia.—p. 862.
Sacral Anesthesia in Urology. W. C. Bryant.—p. 866.
Malignant Tumors of Testicle. J. C. Burt and G. H. Davison, Pittsburgh.—p. 869.
Acute Epididymitis Complicating Urethritis. D. S. Grim, Reading.—p. 873.
Neuralgia of Intercostal and First Lumbar Nerves. J. B. Carnett, Philadelphia.—p. 876.
Abdominal Crisis in Diseases of Central Nervous System. W. H. Mayer, Pittsburgh.—p. 880.
Abdominal Pain Resulting from Thoracic Lesions. T. Klein, Philadelphia.—p. 881.
Dilation and Curettage of Uterus. F. C. Hammond, Philadelphia.—p. 884.
Major Aspects of So-Called Minor Operation, Tonsillectomy. W. D. Chase, Bethlehem.—p. 886.
Administration of Vaccines. A. G. Beckley, Philadelphia.—p. 888.
Intravenous Injection and Spinal, Cisternal and Fontanel Puncture. H. W. Jones, Philadelphia.—p. 889.

Philippine Islands M. Assn. Journal, Manila

9: 265-306 (Aug.) 1929

*Comparative Value in Infant Feeding of Condensed, Fresh, Canned Natural, and Whole Powdered Cow's Milk. J. R. Perez.—p. 265.
Summarized Report on Malaria Surveys and Control in Mindanao and Sulu. A. Ejercito.—p. 277.
Coexisting Cyst and Pregnancy: Twenty-Four Cases. H. Acosta-Sison.—p. 284.

Comparative Value in Infant Feeding of Condensed, Fresh, Canned Natural and Whole Powdered Cow's Milk.—Perez regrets that the milk supply and its control in the Philippine Islands are still in a most primitive state. If the milk supply control can be used as an index of progress in sanitation, the health practice in Philippine municipalities and in many of the cities is still in its infancy. In many cities, towns and barrios throughout the Philippine Islands, there are no dairy farms—not even milch cows. Pediatricians are, therefore, baffled by the problem of extremely high cost, scarcity, and impossibility of obtaining a supply of safe milk. Even if fresh milk is obtainable, there remains the problem of handling and preserving it in the home. In the absence of a safe, adequate and dependable milk supply, the problem of employing canned-milk preparations for infant feeding is forced on them for solution. Since the beginning of American occupation, canned milk of different brands from the United States and from some European countries has invaded the markets and become a more or less common household commodity in the retail shops in cities and towns, even in the remotest barrios. Perez has studied the safety and usefulness of a number of these canned-milk preparations in infant feeding. Of the various milk products used by him, powdered whole cow's milk has been the most satisfactory. The results thus far obtained are most encouraging, especially when the fact is taken into consideration that the preparation of the formulas was entrusted entirely to the mothers, grandmothers and caretakers, many of whom are ignorant. As these results were maintained throughout the remaining period of the feeding test, Perez feels that dry powdered whole cow's milk is the solution, in a large degree, of the milk problem for infant feeding. Being in powdered form, it can be transported anywhere and at the same time eliminates the danger from feeding sour milk and the great expense of keeping fresh or canned milk in fit condition on ice.

Public Health Reports, Washington, D. C.

44: 2149-2200 (Sept. 6) 1929

Chlorophenol Tastes and Odors in Water Supplies of Ohio River Cities. H. W. Streeter.—p. 2149.
Malaria-Parasite Index of School Children in Leflore County, Miss. M. A. Barber and W. H. W. Komp.—p. 2156.

44: 2201-2251 (Sept. 13) 1929

Proposed Plan for Establishment of Morbidity Registration Area. R. C. Williams.—p. 2201.
Sickness Among Industrial Employees During First Three Months of 1929. D. K. Brundage.—p. 2204.

44: 2253-2314 (Sept. 20) 1929

Experimental Studies of Natural Purification in Polluted Waters: I. Apparatus and Technic for Study of Biochemical and Other Oxidations in Liquids. E. J. Theriault and C. T. Butterfield.—p. 2256.

CORRECTION

Effect of Amytal Anesthesia on Uterus and Use in Obstetrics.—In the abstract of this article (THE JOURNAL, October 12, p. 1175), contributed by D. L. Drabkin, I. S. Ravdin, J. C. Hirst and M. E. Lapham, Philadelphia, and published in the *American Journal of the Medical Sciences* **178:** 379 (Sept.) 1929, the dosage used by the authors was inadvertently misquoted; namely, "30 Gm. per kilogram by rectum." This should read "30 mg. per kilogram of body weight by rectum."

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. Children's Diseases, London

26: 163-246 (July-Sept.) 1929

Congenital Neurosyphilis. F. R. Ferguson and M. Critchley.—p. 163.
*Nervous Complications of Whooping Cough. W. G. Sears.—p. 178.
*Herpes Zoster and Varicella. N. G. Hill.—p. 193.
Tracheotomy and Tuberculosis. J. D. Rolleston.—p. 200.
Nature of Milroy-Nonne Disease. F. P. Weber.—p. 204.

Nervous Complications of Whooping Cough.—In Sears' opinion the primary cause in all the types of nervous complications in whooping cough is a toxic one; a meningoencephalitis is the primary lesion. The fact that the cerebrospinal fluid may be under hypertension and in some case shows a "meningeal reaction" with an increase in protein and in the number of cells supports this view. It is impossible to say whether these toxins are produced by the Bordet-Gengou bacillus itself or by some other virus which it activates. When large hemorrhages occur, it is quite possible that a mechanical factor is superimposed and that the temporary increase in venous pressure during paroxysms of coughing ruptures the vessel walls previously damaged by toxins.

Herpes Zoster and Varicella. — Hill is convinced that herpes zoster is an infectious disease and that persons suffering from it should be isolated. Herpes zoster may give rise to either varicella or herpes in susceptible persons. The cutaneous lesions of herpes zoster and varicella are very similar. Investigation of the spinal cord should be carried out to discover whether there is a similarity in the cord lesions of the two diseases. An attack of varicella does not confer immunity against herpes zoster. Further investigation is required to discover whether an attack of herpes zoster will confer immunity against varicella.

British Medical Journal, London

2: 483-524 (Sept. 14) 1929

Diagnostic and Other Errors in Questions of Venereal Disease. L. W. Harrison.—p. 483.
Present Position of Silicosis in Industry in Britain. E. L. Middleton. —p. 485.
*Biophysics of Silica; Etiology of Silicosis. P. Heffernan.—p. 489.
Methods for Reduction of Human Tuberculosis of Bovine Origin. W. G. Savage.—p. 492.
*Clinical Study of Acute Rheumatism. R. C. Lightwood and M. L. Davies.—p. 495.
Surgery of Access to Pleural Cavity. E. R. Flint.—p. 498.
*Rheumatic Type. N. G. Hill and M. Allan.—p. 499.
Strangulated Polypus of Vermiform Appendix. J. J. Robb.—p. 500.
Congenital Diaphragmatic Hernia. E. F. Chapman.—p. 500.

Biophysics of Silica; Etiology of Silicosis.—Heffernan contends that silicosis is a result of the local action of hydrated silica on the pulmonary tissue. This action is of a physicochemical nature, and the speed of its development, other things being equal, depends on the rapidity with which fresh silica hydrosol is formed and brought into contact with pulmonary tissue. Substances that favor the formation of silica hydrosol from silica, when added to the silica dust, accelerate the development of silicosis—for example, the alkalis. Substances that retard or prevent the formation of hydrosol from silica, or coagulate the hydrosol when formed, retard or prevent silicosis —for example, carbon, coal dust, clays and probably many other substances. The action of silica in producing the nodular pulmonary fibrosis which is termed "silicosis" has not been paralleled so far by any nonsiliceous substance. Silica is a normal constituent of plant and animal cells; its presence seems essential in certain tissues, and its absence from the food of the organism disastrous. The study of the rôle of silica in biology suggests that many of the processes of cell metabolism belong to the realm of colloidal physics. Some characteristic cellular phenomena are explained most simply by regarding the living cell as a polyphase colloidal system. Silica has a place in therapeutics comparable to that of lime.

Clinical Study of Acute Rheumatism. — Examination made by Lightwood and Davies of the hearts of 200 children showed that thirty-five (17.5 per cent) had definite rheumatic heart disease; the hearts of six of these children appeared to get worse during the period they were under observation; one has died of malignant endocarditis. No heart in this group was observed to improve appreciably, and the majority remained unaltered. In 108 (54 per cent) of the children the heart was normal when they first presented themselves, but in four of these the heart subsequently became involved; a fifth child developed acute pericarditis, which cleared up, and six months later (when the child was last examined) had left no trace of heart disease. The remaining fifty-seven children (28.5 per cent) were placed in the category of "doubtful hearts." A study of the relation between the state of the heart and tonsillectomy yielded the following data: In 115 patients who had never been subjected to tonsillectomy the heart was normal in sixty-four, doubtful in twenty-nine, and diseased in twenty-two. In forty subjected to complete tonsillectomy the heart was normal in twenty-three, doubtful in ten and diseased in seven. In forty-five who had had incomplete tonsillectomy the heart was normal in twenty-one, doubtful in eighteen and diseased in six. It would appear that, as compared with the children with tonsillar remnants, the tonsillectomized children have a relatively small liability to contract rheumatic infection. In this series of 200 rheumatic children—of whom forty had been subjected to complete and forty-five to incomplete tonsillectomy—only two children could be shown to have developed heart disease after complete tonsillectomy. Observations on the presence of dental caries were made in 154 cases; of these, no carious teeth were present in ninety-seven; one carious tooth each in twenty-nine; two carious teeth each in nine, and three or more carious teeth each in nineteen. There seems to be no evidence of an association between rheumatism and dental caries. The rheumatic child has been described as a constipated child. Among 152 cases, constipation was relatively infrequent, occurring in only seventeen children (11 per cent). All the cardiac irregularities noted fell into one or other of two groups: (1) sinus arrhythmia; (2) premature beats.

Rheumatic Type.—Hill and Allan conclude from their study that there is no type that can fairly be described as the rheumatic type of child.

Edinburgh Medical Journal

36: 573-644 (Oct.) 1929

Postencephalitic Delinquency. R. Cruchet.—p. 573.
*Treatment of Lobar Pneumonia: Use of Nuclein and Vaccines. W. L. Lamb.—p. 593.
*Acute Pneumonia in Recent Influenza Epidemic. D. Stewart and H. J. Gibson.—p. 607.
Clinical Arterioscopy and Arteriography in Living Subject. D. M. Greig. —p. 632.

Treatment of Lobar Pneumonia: Use of Nuclein and Vaccines.—Personal experience with a series of eleven cases in which nuclein solution was used has convinced Lamb that it does not appear to have any marked effect on the course of uncomplicated lobar pneumonia.

Acute Pneumonia in Recent Influenza Epidemic.—Of the fifty cases of acute pneumonia examined by Stewart and Gibson, forty-five showed definite physical signs of acute pneumonia of the lobar type; and five, while showing in the beginning of the illness similar symptoms and signs, eventually turned out to be either acute bronchitis or bronchopneumonia. The death rate in this series was 16 per cent. In thirty-four of the forty-two patients who survived, the illness terminated by true crisis, mostly on the seventh or eighth day. Observations made from direct film and on cultural examination of sputum are recorded. On plate culture *S. viridans* was found in 64 per cent of the cases; *B. influenzae* in 53 per cent; pneumococci in 41 per cent; *M. catarrhalis* in 31 per cent; *Staphylococcus aureus* in 17 per cent; pneumobacilli in 8 per cent, and *Streptococcus hemolyticus* in 2 per cent of the cases examined. Pneumococci were demonstrated in 86 per cent of the cases by the mouse inoculation test.

Lancet, London

2: 535-590 (Sept. 14) 1929

*Maternal Death Rate. G. F. Gibberd.—p. 535.
Blastogenic Principle in Fowl Sarcoma. E. Fränkel.—p. 538.
Diagnostic Value of Estimation of Blood Cholesterol in Cholelithiasis. R. H. O. B. Robinson.—p. 540.
Causation and Treatment of Displaced Mandibular Cartilage. C. P. G. Wakeley.—p. 543.
*Scarlet Fever. A. H. G. Burton and A. R. Balmain.—p. 545.

Diagnosis and Treatment of Anemia in School Children. N. K. Gibbs. —p. 550.
*Action of Ephedrine in Relieving Certain Painful Accompaniments of Leprosy and Lepra Reaction. R. G. Cochrane.—p. 551.
Pneumothorax Induction Trocar and Cannula. A. I. G. McLaughlin and A. J. Dix-Perkin.—p. 552.

Maternal Death Rate.—Gibberd analyzed 45,000 cases and found that the maternal mortality rate in the last sixty years has fallen from 4.4 per thousand to 1.03, and this improvement can be traced directly to changes in obstetric methods. These changes in practice have resulted in an increase in the amount of intervention, but even so the total intervention rate at the present time is less than 9 per cent. It is contended that the increased intervention up to this point is justified by the results obtained and that it may be an important factor in diminishing the death rate by eliminating those cases of profound obstetric exhaustion that must have occurred sixty years ago. Among cases of spontaneous labor, the conscientious use of a simple antiseptic technic and strict attention to the principles of isolation have practically abolished sepsis as a cause of death. Antenatal care has shown its value most dramatically in reducing the death rate in cases of disproportion and malpresentation, and also in making eclampsia a rare disease. It has also given opportunity to look after the general health of the patient during pregnancy so that she is better able to face the risks of labor and the puerperium. The use of intravenous saline or gum saline solution or of blood transfusion has contributed largely to the reduction in the death rate from postpartum hemorrhage and placenta praevia, but concealed accidental hemorrhage accounts for practically as many deaths as it did in former years, and the cause of death in these cases seems to be a profound toxemia. In spite of the enormous amount of study that has been spent on the toxemias of pregnancy since Galabin's time, treatment for this condition, once it has developed (whether in association with accidental hemorrhage or as eclampsia), is as ineffective as ever it was. Apart from the experience gained from periodic swings of the pendulum from radical to conservative lines of treatment, nothing of fundamental importance has been added to the treatment of sixty years ago. Under present conditions of practice an occasional case of fulminating eclampsia or of concealed accidental hemorrhage will occur in spite of reasonable antenatal care, and it is in the treatment of such cases that modern methods have proved so disappointing. The death rate from intercurrent diseases was 0.32 per thousand in the 1863-1875 series, and 0.24 per thousand in the 1919-1928 series, showing that antenatal care has been unable greatly to benefit the pregnant woman who is already seriously ill with some other disease. It is suggested that 0.3 per thousand may be taken as a true measure of the deaths from nonobstetric causes in an average unselected practice, and if this is so it is obvious that these cases become a serious factor only when the total mortality rate is very low.

Scarlet Fever.—Out of 265 cases reported by Burton and Balmain, 191, or 79 per cent, on admission showed hemolytic streptococci in the fauces. Of the hemolytic streptococci in this series, 46.1 per cent of the cases could be classified under one of Griffiths' groups, the remaining 53.9 per cent being inagglutinable with the type serums. Certain of these strains became agglutinable on repeated subculture. In view of the large percentage of inagglutinable hemolytic streptococci, it is impossible accurately to correlate the type of streptococcus with the clinical type of scarlet fever. As far as present knowledge goes, however, type 4 appears to be the least virulent and type 2 the most virulent of the typable streptococci. In twenty-four complications a hemolytic streptococcus was found both in the fauces and at the site of the complication; in ten cases the type was different in the latter from the former. This appears to indicate cross-infection with a different type of streptococcus. The authors are of the opinion that the present system of nursing scarlet fever patients in general wards will ultimately have to be discontinued, and, if such patients have to be removed to a hospital, they will require to be treated in cubicle wards at least until their immunity and—when knowledge is a little more advanced—their type of infection can be determined accurately. The active immunization of convalescent scarlet fever patients who are Dick-positive with scarlatinal toxin is not a satisfactory solution of the administrative problem of dealing with such cases.

Action of Ephedrine in Relieving Accompaniments of Leprosy and Lepra Reaction.—Cochrane asserts that ephedrine by mouth gives almost instantaneous relief from the nerve pains that accompany fever in leprosy. It does not influence the pyrexia. In pains that accompany chronic leprosy, ephedrine given subcutaneously, or, if the patient is strong and healthy, intravenously, is worth a trial. For bone and joint pain which is so distressing, ephedrine appears to give temporary relief.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

53: 821-864 (July 1) 1929

Lung Abscess Caused by Friedländer's Pneumobacillus. A. Lemierre and M. Rudolf.—p. 822.
Typhobacillosis Tuberculosa and Erythema Multiforme. G. Caussade. —p. 826.
*Parallelism Between Development of Nervous and Dental Systems. G. Variot.—p. 830.
Acrocephalic Dysostosis. Apert and F. Regnault.—p. 832.
Aleukia Haemorrhagica. P. Chevallier and P. Flandrin.—p. 836.
Syphilis of Stomach, Pancreas and Lungs with Retroperitonitis and Arteritis. G. Caussade and G. Leven.—p. 845.
Syphilitic Osteoperiostitis of Humerus. R. J. Weissenbach, P. Truchot and D. Ronget.—p. 855.
Hodgkin's Disease and Tuberculosis. P. Merle.—p. 858.

Parallelism Between Development of Nervous and Dental Systems.—Variot discusses the interrelationship of dentition and the development of the cerebropsychic functions, based on several cases which he observed. He reports the case of an infant of 20 months who, although walking alone when 1 year old, did not have any teeth until she was 13 months of age, when the two lower incisors appeared. Although she understands what is said to her and although her tongue, mouth, lips and larynx are normal, she cannot say a single word.

Paris Médical

2: 145-160 (Aug. 17) 1929

Genitosuprarenal Syndrome. Langeron and A. Danès.—p. 145.
Pathogenesis of Malaria. B. le Bourdellès.—p. 150.
Recurrent Myalgic Asthenia. Turries.—p. 153.
Chronic Disturbances of Veins and Their Complications: Treatment with Insulin. P. Quiserne.—p. 156.
*Hemiplegia in Child. P. Barry.—p. 158.

Hemiplegia in Child.—Barry's patient, a child aged 6, developed hemiplegia with motor aphasia. The sugar content of the cerebrospinal fluid was increased. The general condition was similar to that present in epidemic encephalitis. After an intravenous injection of sodium salicylate, marked improvement was evident. In all, twenty-three injections were administered, each consisting of 10 cc. of a solution containing 10 per cent of sodium salicylate and 10 per cent of dextrose. Recovery occurred four weeks after the commencement of the treatment.

Presse Médicale, Paris

37: 1037-1052 (Aug. 10) 1929

*Perforated Gastroduodenal Ulcers: Complemental Gastro-Enterostomy. A. Ricard.—p. 1037.
Enzymoreaction: A New Reaction Based on Enzyme Theory. L. Sivori, U. Rebaudi and I. Menniti.—p. 1038.
Staphylococcus Septicemia Resembling Erysipelas. P. George.—p. 1047.
Gastric Disturbance of Nervous Origin. M. Nathan.—p. 1048.

Perforated Gastroduodenal Ulcers: Complemental Gastro-Enterostomy.—On the basis of a personal study of twenty-one cases and a review of the literature on the subject, Ricard concludes that gastro-enterostomy with or without suture or resection of the ulcer is advisable in patients with a perforated gastric ulcer. It is of great help in perforated ulcers of the body of the stomach and is essential in perforated pyloric ulcers. In six of twenty-one cases he performed gastro-enterostomy without suture or resection of the ulcer and the patients recovered without further complications.

37: 1069-1084 (Aug. 17) 1929

*Angina Pectoris Caused by Ergotamine Tartrate. M. Labbé, R. Boulin, Justin-Besançon and Gouyen.—p. 1069.
Paratyphoid: Infection with Bacterium Paratyphosum C. B. le Bourdellès.—p. 1069.
Hypertension in Pulmonary Artery. L. Ramond.—p. 1079.
Use of Arsphenamine Preparations in French Colonies. J. Legendre.—p. 1081.

Angina Pectoris Caused by Ergotamine Tartrate.—Labbé et al. report this occurrence in a patient, aged 49, to

whom ergotamine tartrate had been administered by intramuscular injection in the treatment of exophthalmic goiter. The patient presented an arrhythmia which an electrocardiogram showed to be of the auricular flutter type. The authors believe that the ergotamine tartrate caused a spasm of the coronary arteries which produced the auricular flutter and a nervous syndrome. The theory of the spastic origin of angina pectoris may derive support from this case.

37: 1101-1116 (Aug. 24) 1929

Osteosynthesis in Treatment of Closed Fractures of Diaphysis of Tibia and Fibula. M. Patel and J. de Girardier.—p. 1101.
*Enuresis and Spina Bifida Occulta. J. Jacobovici, C. I. Urechia and E. Teposu.—p. 1103.
Deaf-Mutism. M. Nathan.—p. 1105.

Enuresis and Spina Bifida Occulta.—Jacobovici et al. state that not enough attention is given the relation of urinary incontinence and nocturnal enuresis to spina bifida occulta. On the basis of a study of nineteen cases which came to their observation (in sixteen of which operation was performed) and a review of the literature on the subject, they conclude that surgical intervention is indicated in many cases, but not unless all other means have been without results. Reeducation in children, especially those with mental deficiency, is essential.

Revue Belge des Sciences Médicales, Louvain

1: 409-480 (May) 1929

*Relation of Embryomas to Cancer. J. Maisin and P. Dupuis.—p. 409.
Antisyphilitic Treatment by Local Aerothermotherapy of Chancre. A. Bessemans, J. Vercoullie and R. Hacquaert.—p. 425.
*Krukenberg's Tumor. P. Moureau.—p. 431.
Tuberculosis. F. de Potter.—p. 444.

Relation of Embryomas to Cancer.—Maisin and Dupuis, after a discussion of the literature on the subject, describe the technic of their researches in chickens. The injection of about 1 cc. of mashed chicken embryos from four to nine days of age into the pectoral musculature of an adult chicken produces a growth, which, however, cannot be accepted as constituting a true tumor. In most cases this growth represents a survival of the cells injected; cartilaginous and bony nodules are found, sometimes skin epithelium together with a group of nerve cells or intestinal epithelium. Of three animals inoculated with ten crushed embryos 9 days of age mixed with mouse cancer (Bashford), all presented a swelling several days subsequent to the injection. One of them died three weeks later, but at necropsy did not show pathologic changes. The remaining two, reinjected four months later with embryonic pulp of 5 day old embryos, were in good condition without evidence of pathologic change even one year later. A suspension of crushed embryos 7 days of age in a 1:10,000 solution of indole was injected into five adult chickens. Except for embryomas of moderate dimension, pathologic changes were not evident. In a series of five chickens, crushed embryos 7 days of age suspended in a solution of arsenic acid were injected. Aside from small embryomas, growths did not develop. Three cocks injected weekly over a period of two months with five day old embryos mixed with a 1:10,000 solution of arsenic acid and after this submitted to monthly intravenous injections of identical emulsion developed small embryomas but were otherwise in perfect condition up to one year later. The attempt to repeat Askanazy's and Petroff's experiments with mammals on chickens gave, in conformance with Deelman and Pentimalli's research, negative results. A series of experiments were performed using a 1:10,000 solution of ionium for injection in two cocks. After two weekly injections of 2.5 cc. of this solution, 1 cc. of a crushed 5 day old embryo was injected into the pectoral musculature. In each a large tumor developed. One animal developed paralysis five months later and was killed. On examination the tumor was shown to be of the type of round cell sarcoma, rich in mitoses. The embryoma next to which the tumor had developed was composed of a variety of tissues containing multiple cystic cavities filled with a viscid yellowish fluid. The second animal died ten months after the injection of crushed embryos, of an infection caused by an ulcerative process on its claw. The embryoma was of the same type as in the preceding animal, but a tumor was not evident. Two adult chickens, after repeated injections of ionium, were given embryonic pulp. They developed embryomas. In one bird this was resorbed after a short time, whereas in the other it remained stationary following a short period of growth. In two more chickens, simultaneous injections of embryonic pulp and ionium solution were made. Within two weeks, tumors developed in both animals. Autotransplantations of parts of the tumor were reabsorbed. Microscopic examination revealed the usual type of embryoma. However, the animals died subsequently. The necropsy showed the presence of multiple lesions in the intestines of both animals, of the type of avian tuberculosis with proliferating epithelioid cells. The pseudotumors contained acid-fast bacilli. The injection into one chicken of 1 cc. of embryonic pulp with 0.5 cc. of tar, followed by further occasional injections of 0.3 cc. of tar, resulted in the death of the animal. Necropsy revealed an embryoma and in the abdomen multiple small granulomatous tumors similar to those observed in the previous animals. The liver appeared cirrhotic and contained a large white homogeneous tumor, nowhere necrotic. Microscopic examination revealed its malignity. Maisin and Dupuis conclude from these results that experimentally produced embryomas in the chicken form a mildly precancerous condition; in no case did they develop into malignant tumors.

Krukenberg's Tumor.—Moureau reports the occurrence of these tumors in three patients. The first, a woman, aged 30, had been sick for three months previously. Nausea and vomiting occurred after meals, menstruation was irregular, two tumors appeared on the base of the thorax, the abdomen was distended, and the patient suffered from constipation and had lost weight. Vaginal examination revealed the presence of bilateral tumors in the adnexa. Ascitic fluid was withdrawn; after several days a cancerous infiltration appeared at the site of puncture. The patient died one month later. Necropsy showed the stomach to be small and hard, with a thickened wall of the type of plastic linitis; bilateral tumors of the ovaries with metastases in the abdominal wall and the lymph nodes were present. Microscopic examination left no doubt as to the diagnosis of Krukenberg's tumor. In the second patient, a woman, aged 34, an edema of the left leg with increasing feebleness and loss of weight persisted. Menstruation had not been evident since the onset. Constipation, vomiting with increasing ascites, and an edema in the other leg occurred. On operation about 3 liters of ascitic fluid was withdrawn and two tumors in the ovaries were removed. The patient did not improve, however, and died four weeks later. Necropsy was not performed, but microscopic examination of the tumor showed its conformity with the characteristics of Krukenberg's tumor. The actual gastric involvement was not demonstrated, but the patient's history indicated its presence. In the third patient, a woman, aged 37, the ovaries had been removed and subtotal hysterectomy performed. In her history, symptoms of gastric disturbance were evident with an extensive hematemesis five years previously. Very little ascitic fluid was present. Histologically the tumors were of the type of Krukenberg's tumor. Roentgen examination of the intestinal tract demonstrated the presence of lesions and infiltrations in the wall of the stomach. The right lung also showed numerous translucent uncalcified nodules. However, the patient recovered and five months later had no more gastric trouble and had gained 9 Kg. (20 pounds). Moureau concludes that in gastric carcinoma occurring before the menopause not only is gastrectomy indicated but also the removal of the ovaries to prevent the development of metastases and, as the uterine muscle is frequently involved, also hysterectomy.

Schweizerische medizinische Wochenschrift, Basel

59: 805-828 (Aug. 10) 1929

*Supravaginal Amputation in Myomas of Uterus. O. Beuttner.—p. 805.
Tetanus Prophylaxis, with Special Consideration of Conditions in Graubünden Canton. R. Campell.—p. 813.
Therapy of Tetanus. O. Bayard.—p. 818.
Treatment of Dermatomycosis. C. Salzmann.—p. 819.

Supravaginal Amputation in Myomas of Uterus.—Beuttner points out that in order to determine the best method for the treatment of myoma of the uterus the following factors should be considered: the size of the myoma, its location, eventual pathologic changes such as degeneration or calcification, and the condition of the adnexa uteri. Roentgen and radium irradiations were employed when the myomatous uterus was not larger than a gravid uterus in the third or fourth month

of pregnancy and had retained its normal shape and position and when the adnexa did not show pathologic changes. The operative treatment is the one that is employed in the majority of cases. Of 410 patients with myoma of the uterus, 260, or 63 per cent, were treated surgically. As the best operative method the author recommends supravaginal amputation. He gives a detailed description of the technic of this operation and he includes a tabular report of forty cases. This table indicates the methods of incision and of ligation that were employed in each instance and also the duration of the operation. The average time required for the operation was from thirty-three to thirty-six minutes. The author further enumerates the advantages of supravaginal amputation as compared with total amputation. He states that the surgeon should strive to preserve at least a part of the cervix uteri whenever it is possible. The portion of the cervical canal nearest the uterus is free from bacteria. If the amputation is done there it will be less difficult to maintain asepsis than if it is done near the vagina, where the secretion contains numerous bacteria. Other advantages of the preservation of the cervix uteri are that the cervix gives support to the bladder and keeps the vagina in the normal form and that the cervical lymph nodes supply the vagina with the necessary moisture. The uterorectosacral ligaments should likewise be preserved whenever possible. Total amputation should be resorted to only in exceptional cases.

59: 829-852 (Aug. 17) 1929

Radium Therapy of Malignant Tumors of Oral Cavity. E. Berven.—p. 829.
Symptomatology and Treatment of Disturbances During Menopause. P. Hüssy.—p. 832.
Physiology and Pathology of Thyroid. M. Hausmann.—p. 836.
*Theory of Formation of Urine Contradicting the Bowman-Heidenhain Hypothesis. K. Bujnewitsch.—p. 837.
Severe Aplastic Anemia in Chronic Aniline Intoxication. J. Haldimann.—p. 838.

Theory of Formation of Urine.—Bujnewitsch explains his theory of the formation of urine, which is contrary to the generally accepted hypothesis of Bowman and Heidenhain. These authors assume that water and sodium chloride are eliminated by the glomeruli, whereas all other constituents of the urine are eliminated by the tubules. The author points out that this theory is not in accordance with certain clinical facts. If the glomeruli really did excrete the water and the sodium chloride, it would follow that when they do not function properly, as in cases of sclerotic processes, the water and the sodium would be retained in the organism and consequently would cause edema. However, it is known that the conditions are exactly contrariwise. In sclerotic processes the excretion of water and of sodium chloride is increased, whereas the urea is retained and causes uremia without edema. On the other hand, in disturbances in the function of the tubules, as in parenchymatous nephritis, the urea is excreted in normal quantities whereas the water is retained and causes edema. In accordance with the Bowman-Heidenhain theory, one would expect in such cases a retention of the urea and an increased elimination of water and of sodium chloride. Because the clinical and anatomic conditions contradict the Bowman-Heidenhain hypothesis, the author advances the following theory: The tubules eliminate water and sodium chloride and the glomeruli excrete all the other constituents of the urine. A molecular interchange also takes place in the glomeruli. They again resorb sodium chloride and water and so concentrate the urine. The author further shows that his hypothesis is in accordance with the clinical facts in the various renal and urinary diseases. He also points out that experimental researches of other investigators have furnished additional proofs for the correctness of his theory of the formation of urine.

Archivio Italiano di Chirurgia, Bologna

24: 1-144 (June) 1929

Surgery of Choledochus. V. Pettinari.—p. 1.
Pneumatosis of Large Intestine: Etiology and Pathogenesis. V. Puccinelli.—p. 70.
*Surgical Tuberculosis of Stomach. A. Mirolli.—p. 83.
Human Dermatomycosis Due to Penicillium Minimum (Siebenmann). A. Businco and A. Cardia.—p. 118.

Surgical Tuberculosis of Stomach.—The stomach, Mirolli states, is one of the least frequent localizations of tuberculosis. Glaubitt reported only 0.4 per cent out of a total of 12,528 necropsies. The proportion rises to 2.4 per cent if only cases of tuberculosis are considered. Three forms of gastric tuberculosis have been distinguished: (1) the miliary type, characterized by the formation on the walls of the stomach of small granulations such as are found chiefly in acute miliary tuberculosis; (2) the ulcerous type, with a frank predominance of ulcerative factors, and (3) the hypertrophic type. Type 2, in contradistinction to type 1, may take on a surgical character, in case of perforation. About 35 per cent of tuberculous ulcerations are located at the pylorus. In general, the ulcerous type is encountered in the final stage of grave pulmonary tuberculosis, in which the gastric localization is a phenomenon of only secondary importance in the general picture. In type 3, proliferative phenomena prevail over the destructive phenomena. It may exist with few ulcerations, and sometimes the mucosa may be completely intact in the affected region. This type is usually localized at the pylorus, but it may involve also other parts of the stomach. A marked adenopathy may be associated with this type of gastric tuberculosis. Metastases in the lymph nodes occur as in cancer. Mirolli discusses the various opinions that have been advanced in explanation of the pathogenesis of gastric tuberculosis but does not endorse any of them. He concludes, however, that gastric tuberculosis is of either mucosal or hematogenic origin. Diagnosis of the condition is difficult. Roentgen examination is of little value in the differential diagnosis. In the fifty-three cases of gastric tuberculosis that the author collected from the literature (including his own personal case), the nature of the disease could be ascertained through microscopic examination, biologic tests, the clinical course or the macroscopic anatomopathologic description. In all these cases, surgical treatment was given. Mirolli holds that, in the treatment of gastric tuberculosis, the same conceptions must be accepted as in the treatment of gastric ulcer. Unless there are contraindications, it is well to perform resection, which looks toward eliminating the tuberculous focus and preventing the ulcerative process from developing into a neoplasm. Another factor in favor of resection is the difficulty that arises many times in examining the viscus and, at the laparotomy, in making a differential diagnosis between tuberculosis and cancer. When, however, the anatomic or the general conditions do not favor resection, a simple gastro-enterostomy may be performed, which may be definitive (taking account of the good results second in the author's own case) or, after an undetermined interval, it may be followed by resection, in case the local and general conditions affecting the patient shall have sufficiently improved.

Semana Médica, Buenos Aires

36: 61-120 (July 11) 1929

*Surgical Treatment of Pericardial Adhesions. T. Martini and M. Joselevich.—p. 61.
Hereditary Spastic Paraplegia. J. C. Montanaro and J. L. Hanón.—p. 71.
*Evacuation of Amebic Abscess of Liver by Vomiting. F. Puchulu.—p. 74.
Vaccination with Scarlet Fever Anatoxin: Larson's Method. J. M. Miravent.—p. 76.
Mortality of Infants Aged from Six to Twelve Months in Rosario. P. P. Piñero Garcia.—p. 80.
Recurrence of Mastoiditis After Operation. Y. Franchini.—p. 103.

Surgical Treatment of Pericardial Adhesions.—Martini and Joselevich review the various operations that may be performed for the removal of pericardial adhesions. The only operation that they feel should be performed is precordial thoracectomy. The authors report four cases. Three of their patients died some time after the operation; one is alive and in good condition two years and nine months after the operation. They compare their results with the statistics of several authors.

Evacuation of Amebic Abscess of Liver by Spontaneous Vomiting.—Puchulu reports a case of amebic abscess of the liver in a woman, aged 27, who gave a history of having had dysentery five years previously. She had fever, 102.2 F., and was anemic and emaciated. Twenty days after the onset of this attack, the patient suddenly vomited 150 cc. of a thick chocolate colored material. She vomited again forty-eight hours later. The vomitus did not contain amebas. After the vomiting the fever disappeared and the general condition was greatly improved. Four months later when she was discharged, the anemia had disappeared and roentgen examination of the liver

showed the organ to be normal. Evidently the two vomiting spells had emptied the abscess completely. The patient had been given only antipyogenic vaccines before she vomited, and emetine hydrochloride and neoarsphenamine after the vomiting.

Beiträge zur Klinik der Tuberkulose, Berlin

72: 1-96 (May 17) 1929

*Effect of Vitamin Deficiency on Course of Tuberculosis. K. Hagedorn. —p. 1.
*Carbon Treatment of Tuberculosis. H. Gickler.—p. 32.
*Healing of Cavities in Pulmonary Tuberculosis. W. Bronkhorst.—p. 36.
*Spleen Diet in Pulmonary Tuberculosis. P. Ruttgers and A. Kamsler. —p. 68.
Late Results of Treatment in Phthisis. E. R. Kritschewskaja.—p. 79.
Displacement of Heart in Cicatricial Contraction of Lung. A. Hecker. —p. 85.

Effect of Vitamin Deficiency on Course of Tuberculosis.—Hagedorn states that, in rats on a diet containing insufficient vitamins, the generalization of inoculation tuberculosis occurs earlier and the resulting lesions are more extensive than they are in rats on a diet containing sufficient vitamins. The effects of vitamin A deficiency and of vitamin C deficiency are approximately the same but the effects of vitamin B deficiency are less marked.

Mechanism Involved in Carbon Treatment of Tuberculosis.—Gickler describes four experiments that he performed to determine the mechanism involved in the treatment of pulmonary tuberculosis with particles of carbon having an average diameter of from 1 to 3 microns. In the first experiment he added a suspension of carbon particles to physiologic solution of sodium chloride (at 98.6 F.) that was kept in motion and that contained leukocytes obtained according to the method of Hamburger and de Haan. When the carbon particles came in contact with the leukocytes they lost their molecular movement and were phagocytosed, causing the leukocytes to become black. The motionless carbon particles in the leukocytes remained there permanently. In the second experiment he demonstrated that, in cultures of fibrocytes obtained from embryonal chicken hearts according to Erdmann's method, not only were the carbon particles phagocytosed without harm to the cells but the cultures grew more vigorously than did cultures to which carbon particles had not been added. The third experiment was performed to determine the resorptive and indurative changes in pulmonary tuberculosis and the anatomic basis for the febrile reaction. Two cubic centimeters of a suspension of carbon particles was injected into the ear vein of rabbits; at intervals of two hours one of the rabbits was killed, the last after twenty-four hours. In none of the rabbits could evidence of phagocytosis of the carbon particles by leukocytes be found. Soon after the injection was made, the particles passed out of the blood vessels of the lung and some were now in the adventitial cells and in the interalveolar septums; others were lying free in the tissues. Almost everywhere there was present a marked increase in the adventitial cells. In the liver, carbon particles had been phagocytosed by the Kupffer cells. The most striking change in the liver, however, was the increase in the number of polymorphonuclear leukocytes in the capillaries. In the rabbit killed after six hours the leukocytes were uniformly distributed throughout the liver capillaries; in the rabbit killed after twenty-four hours there was a definitely greater number of leukocytes in the liver. The resorptive processes in the spleen paralleled the resorptive processes in the liver. In the spleen also there was marked increase in the number of leukocytes. In the fourth experiment a suspension of carbon particles was injected into the ear vein of tuberculous rabbits. Postmortem examination revealed that some of the carbon was free in the tissues and some was concentrated around tubercles. Even after an interval of months, carbon particles were still present in healthy portions of the alveolar septums but instead of being present chiefly in cells they were contained in a wall of connective tissue. From these experiments Gickler concludes that carbon particles injected intravenously are stored in the lungs, liver and spleen and activate the cells of the reticulo-endothelium. The fever that follows the injection of carbon particles is caused partly by the resulting tissue reaction and partly by the subsequent degeneration of a large number of leukocytes in the liver and spleen. The author does not believe that the fever can be interpreted as a manifestation of a focal reaction. The development of connective tissue scars in healthy portions of the lung as the result of the presence of the carbon particles proves that the injection of a suspension of carbon particles is followed by the development of unspecific scar tissue.

Healing of Cavities in Pulmonary Tuberculosis.—Bronkhorst presents the case histories of five patients in whom healing of tuberculous cavities of the lung occurred. He insists on the following requirements in the definite diagnosis of the disappearance of lung cavities: (1) the demonstration of a cavity which later cannot be demonstrated by any of the methods of examination; (2) the simultaneous diminution in the amount of expectoration and the disappearance of tubercle bacilli from the sputum, and (3) the disappearance of elastic fibers from the sputum. The size of the cavity is determined not only by the amount of tissue destroyed but also by the elasticity of the wall of the cavity and of the surrounding lung tissue. The obliteration of a cavity by the elasticity of the lung tissue is the immediate reaction to the retrogression of inflammatory changes in the tissue surrounding the cavity. A rapid change in the size of a cavity may therefore be considered as a manifestation of the degree of activity of the inflammation in the vicinity of the cavity. If marked changes which may modify the elasticity of the lung tissue are present in the vicinity of the cavity, one may expect a rapid change in the size of the cavity. Bronkhorst does not believe that artificial pneumothorax is indicated as soon as a typical new cavity is diagnosed. He has seen many patients with cavities of the lung recover under sanatorium treatment only and reserves pneumothorax, exeresis of the phrenic nerve and thoracoplasty for the patients in whom this form of treatment does not result in obliteration of the cavity.

Results of Spleen Diet in Pulmonary Tuberculosis.—Ruttgers and Kamsler report excellent results with the spleen diet in several cases in which other forms of treatment had been used without success. Although tubercle bacilli persisted in the sputum and roentgen examination revealed that the cavities had not disappeared in most cases, either the disease was arrested or the less involved lung was so improved that surgical intervention could be attempted on the other lung. In all the patients a definite improvement in the general condition and in the blood picture and an increase in the body weight and in the resistance were noted. The author believes that the spleen diet in tuberculosis is of great importance both from the theoretical standpoint because it suggests relations between the spleen and the lungs and tuberculosis, respectively, and from the practical standpoint because in cases in which other methods have failed it results in improvement in the patient's condition.

Beiträge zur klinischen Chirurgie, Berlin

146: 551-737 (June 12) 1929

Juvenile Gangrene: Pathogenesis and Symptomatology. H. Schum.—p. 551.
Pseudodislocation of Hip Joint. R. J. Harrenstein.—p. 592.
Repeated Rupture of Spleen: Scar Formation After Hemorrhage in Spleen (So-Called Primary Tumors of Spleen). K. Englmann and Hitzler.—p. 605.
*Etiology of Acute Purulent Polymyositis in Japan. Y. Osawa.—p. 621.
*Chylous Cysts of Neck. J. Volkmann.—p. 654.
*Intestinal Intussusception in Children. W. Obadalek.—p. 668.
Volvulus of Stomach. W. Wollner.—p. 708.
*Transplantation of Pedicled Cartilaginous Symphysis. K. Reschke.—p. 713.
Technic of Chordotomy. J. Babtschin.—p. 721.
Chronic Destructive Synovitis. R. Becker.—p. 732.

Etiology of Acute Purulent Polymyositis in Japan.—Osawa bases his theory on many animal experiments and the study of thirty cases. The interrelation of the disease with vitamin B deficiency is discussed. Thirteen of Osawa's patients had beriberi; thirteen others presented various symptoms of the disease; only four did not present any symptoms of beriberi. This clinical evidence gives support to the results obtained in animal experiments.

Chylous Cysts of Neck.—Volkmann reports the occurrence of this condition in three patients. The first, aged 34, six months previously had developed a swelling on the right side of the neck which rapidly increased and was diagnosed as a cystic lymphangioma. On puncture, however, 28 cc. of a cloudy yellowish fluid exuded and a diagnosis of chylous cyst was made; chemical examination confirmed the diagnosis. The cyst was removed; in the course of the operation it ruptured and

chyle flooded the wound. The patient recovered, however, within a short period. A slight swelling recurred a week later but it receded and has not reappeared. The second case concerned a woman, aged 23, in the seventh month of pregnancy. Two years previously she had developed a swelling on the right side of her neck which on puncture yielded pus. The author withdrew 120 cc. of fluid from the cyst and injected 5 cc. of iodoform in oil. The swelling receded entirely. Two years later the patient returned with a recurrence of the swelling. A culture of the fluid withdrawn remained sterile; the chemical composition of the fluid was similar to that from the first patient. The cyst filled again one month later and 46 cc. of fluid exuded on puncture; this time 5 cc. of iodized sesame oil 20 per cent was injected. The cyst filled again after six months, the patient still refusing an operation. Sixty-nine cubic centimeters of fluid of the same composition was withdrawn from the cyst. In a third patient, aged 24, a swelling on the left side of the neck had persisted for two years. Roentgen and ultraviolet irradiations were used on the assumption that it was of tuberculous origin. As no effect was evident after eighteen irradiations, the tumor was punctured. A milky white fluid exuded, conforming in chemical composition to the fluid found in the previous cases. Thirty cubic centimeters of fluid was withdrawn. One month later, two small nodules were still felt; after three months only one was noted at the site of the cyst. Volkmann reviews the literature on the subject and discusses the etiology of the condition.

Intestinal Intussusception in Children.—On the basis of a personal study of fifty-three cases, of animal experiments and of an extensive review of the literature on the subject, Obadalek concludes that operation without regard to the age of the patient or the nature and duration of the symptoms is indicated in the treatment. By means of local chemical irritation and cauterization of the mucous membrane in the intestine of a rabbit and by excitation of the vagus, invagination may be produced experimentally. The intussusception is chiefly caused by the annular muscular apparatus, to a slight extent by the layer of longitudinal fibers. Ileocecal intussusception is caused by a primary spasm of the lower part of the small intestine. Its frequency may be explained by the fact that a spasm of this part of the intestine is more apt to cause invagination than a spasm of any other part. The tetanic contraction is caused by anatomic or inflammatory changes in the intestinal tract and mechanical or chemical irritants in its contents. Disturbances of nutrition and spasmophilia predispose to intussusception. The demonstration of fluid in the abdomen is of the same importance as the other ileus symptoms of invagination.

Transplantation of Pedicled Cartilaginous Symphysis.—Reschke reports experiments performed on rabbits. He based these on the methods of operation described by various authors. The cartilage can be preserved if a suitable pedicle of the soft parts is provided and enough time is allowed for healing before severing it. If the division is performed too early and if the nutrition of the pedicle is deficient, this type of transplantation resembles free autoplasty of the symphysis in closed bone and a good functional result is less apt to be obtained. As a result of his experiments, Reschke considers a period of four weeks as the proper time to elapse before severing the pedicle.

Deutsche medizinische Wochenschrift, Berlin

55: 1329-1368 (Aug. 9) 1929

New Medicaments: Necessity of Legal Supervision of Their Manufacture and Distribution. F. Haffner.—p. 1329.
Attempts to Detoxicate Chloroform. H. Fühner.—p. 1331.
Intracutaneous Potassium Ferricyanide Reaction in Icterus. T. Brugsch.—p. 1332.
Etiologic Factors in Diseases of Ear and of Upper Air Passages. E. Wirth.—p. 1334. C'td.
Disturbances of Liver, Due to Chronic Lead Poisoning. E. Zadek.—p. 1336.
*Glycosuria Innocens During Childhood. H. Rau.—p. 1338.
*Determination of Blood Group Valueless for Differential Diagnosis. F. Lickint and J. Tröltzsch.—p. 1339.
Bronchography by Means of Practical Simplified Method. G. Brdiczka.—p. 1341.
Necessity of Treatment in Early Stages of Latent Syphilis. E. Feilchenfeld.—p. 1341.
Poisoning Caused by Edible Mushrooms. R. Gutzeit.—p. 1342.
Diagnosis of Pyuria in Children. R. Fischl.—p. 1343.
Eosinophilia in Rheumatic Diseases. H. Matthisson.—p. 1343.

Glycosuria Innocens During Childhood.—Rau observed glycosuria innocens in a girl, aged 7. Varying quantities of dextrose were excreted in the urine. The daily amounts fluctuated between 2 and 50 Gm. However, the amount of blood sugar was entirely normal. The qualitative composition of the food, and insulin injections, did not influence the excretion of sugar in the urine. During an attack of measles the child excreted daily 30 Gm. of dextrose. In the fever period, lasting six days, she lost 1 Kg. in weight, although she had received 1,600 calories daily. When the same number of calories was given while the child was not feverish, she excreted only 17 Gm. of dextrose and she also gained in weight. This shows that the degree of glycosuria depends on the general metabolism. When the patient was allowed to choose her foods, she requested a diet rich in swee'ts and deficient in fats, and when these foods were given 20 Gm. of dextrose was found in the urine. The author points out that glycosuria innocens is comparatively rare in adults and that it has never been observed in children. He also states that in the family history of his patient there is evidence that an uncle of the child probably had glycosuria innocens. The prognosis in this condition is usually favorable, but an effective method of treatment has not been found.

Determination of Blood Group Valueless for Differential Diagnosis.—Lickint and Tröltzsch review the literature concerning the significance of the determination of the blood group for diagnostic purposes. They also report the results of their own investigations. They conclude that the determination of the blood group is of value in blood transfusion, in malaria inoculation and in transplantation. However, for the differential diagnosis it is not of practical value.

Klinische Wochenschrift, Berlin

8: 1521-1560 (Aug. 13) 1929

Significance of Biopsy in Diagnosis of Tumors. C. A. Hellwig.—p. 1521.
Group Specific Substances A and B: Their Chemical Behavior and Their Demonstration in the Fluids of the Body. B. Brahn and F. Schiff.—p. 1523.
Significance of Polyphasic Buffer Action in Normal and Pathologic Physiology. F. Lebermann.—p. 1525.
*Pathogenesis of Pernicious Anemia: Results of Postmortem Examination of Patients Who Died During Remission. I. Zadek.—p. 1527.
Agranulocytosis with Lesions in Esophagus. W. Schultz.—p. 1530.
Glycolysis and Behavior of Lactic Acid in Normal and Pathologic Cerebrospinal Fluid. H. Fasold and H. A. Schmidt.—p. 1532.
Observations on Action of Histamine on Circulation in Healthy Persons, in Those with Hypertension, Hypotension or Cardiac Insufficiency. F. Kisch.—p. 1534.
*Usefulness of Several New Turbidity and Flocculation Reactions for Serologic Diagnosis of Syphilis. H. Gross and L. Oelrichs.—p. 1537.
Method of Concentration of Leukocytes in Morphologic Examination of Blood. L. Villa.—p. 1538.
Asymmetric Synthesis of Esters by Pancreatic Esterase. P. Rona and R. Ammon.—p. 1539.
Liver as Blood Depot. W. Grab, S. Janssen and H. Rein.—p. 1539.
Changes in Permeability Following Injection of Thyroxin: Observations on Frogs. A. Fröhlich and E. Zak.—p. 1540.
Roentgen Diagnosis of Perforation of Gastric Ulcer. A. Sonnenfeld.—p. 1540.

Pathogenesis of Pernicious Anemia: Results of Postmortem Examination of Patients Who Died During Remission.—Zadek believes that the studies that have been made concerning the mechanism involved in the liver therapy of pernicious anemia will also give us a better understanding of the pathogenesis of this condition. He points out that the periods of remission that are noted in patients with pernicious anemia give certain indications concerning its etiology. A chronic disease with remissions and relapses such as occur in pernicious anemia cannot be due to a bacterial agent. Hematologic examinations which are made during the period of complete remission do not give the least indication that the patient has had pernicious anemia. The author further reports two cases of pernicious anemia extending over several years. The patients died during a period of remission as the result of an intercurrent disease. Postmortem examination revealed only the pathologic changes that were caused by the complicating diseases which had led to the fatal outcome. Indications of the presence of pernicious anemia, however, could not be detected. Not even the cytologic examination of the bone marrow revealed changes that are characteristic of pernicious anemia. The author points out that, since the introduction of liver therapy, more patients

will pass through these stages of remission. He suggests that this will bring new opportunities to study these problems, especially the changes in hemolysis and regeneration.

Usefulness of Several New Turbidity and Flocculation Reactions for Serologic Diagnosis of Syphilis.—Gross and Oelrichs performed tests to determine the relative value of the serologic reactions used in the diagnosis of syphilis. The Wassermann test is still the standard method. However, there are several turbidity and flocculation reactions that may be performed to supplement and to control the Wassermann test. The authors examined 1,500 serums. In addition to the Wassermann test they employed the following tests: Kahn's, Bruck's, Dold's, Meinicke clarification, Meinicke turbidity and Sachs-Witebsky's citochol (*München. med. Wchnschr.* **76**:657 [April 19] 1929; abstr. THE JOURNAL, July 6, p. 82). They come to the conclusion that besides the Wassermann test several turbidity and flocculation tests should always be done. It was found that the Kahn test, the citochol reaction and the Meinicke turbidity reaction were the most useful supplementary tests, not only because they are relatively simple and rapid but also because in regard to their sensibility and their specificity they are equal or even superior to the Wassermann test.

Medizinische Klinik, Berlin

25: 1197-1234 (Aug. 2) 1929

Significance of Predisposition and Exposure in Origin and Development of Chronic Pulmonary Tuberculosis. J. Meinertz.—p. 1197.
*Constipation in Multiple Sclerosis and in Tabes Dorsalis. L. Hess and J. Faltitschek.—p. 1200.
Frequency of Roentgenologic Demonstration of Pineal Body: Its Diagnostic Significance. H. Rothmann.—p. 1205.
*Blood Pressure Reflex. A. Hirschbruch.—p. 1206.
Clinical Aspects and Diagnosis of Tumors of Lung. W. H. Crohn and B. Weber.—p. 1209.
Lymphogranulomatosis of Stomach. K. Tschilow.—p. 1211.
Relation Between Metabolism and Functional Disturbances of Skin. E. Pulay.—p. 1212.
Treatment of Acute Gonorrhea with Acriflavine Hydrochloride. K. Skutezky.—p. 1216.

Constipation in Multiple Sclerosis and in Tabes Dorsalis.—Hess and Faltitschek studied the functioning of the internal organs in cerebrospinal diseases. Constipation was noted in eleven cases of multiple sclerosis and in seven cases of tabes dorsalis. The authors made careful observations on the functioning of the intestine in all the patients. In the cases of multiple sclerosis they noted a prolonged retention of the feces in the proximal segments of the colon. This part of the colon was dilated and the haustral churning was hardly noticeable. The passage to the distal segments of the transverse colon was characterized by deep haustral segmentation. This phenomenon indicates a spastic or hypertonic condition. The intestinal disturbances in the patients with tabes dorsalis differ essentially from those in persons with multiple sclerosis. Whereas in patients with multiple sclerosis the stagnation of the feces occurs in the proximal segments of the colon, in patients with tabes dorsalis the feces are retained in the descending colon and in the sigmoid. The functioning of the upper portions of the large intestine are almost normal in these patients. The stagnation of the feces in the lower parts of the colon indicates a disturbance in the mechanism that regulates defecation. The authors point out that the nerve which presumably innervates this part of the colon originates in the sacral plexus, and because in tabes dorsalis this part of the spinal cord usually shows pathologic changes it may be assumed that these disturbances also affect this nerve.

Blood Pressure Reflex.—Hirschbruch points out that in repeated determinations of the blood pressure a second measurement sometimes registers a higher pressure than the first, and if the test is made a third time an additional increase may be noted. In examinations on 500 persons the author proved that these fluctuations are not accidental but are symptomatic of various pathologic conditions. He gives a detailed description of the method of performing the test. He found that individuals with a normal circulation do not react when the upper arm is compressed. Not even all persons with cardiac or circulatory disturbances manifest the blood pressure reflex. Among the persons in whom compression of the arm does produce an increased blood pressure and louder arterial sounds are especially those with angina pectoris or with similar stenocardiac disturbances. That the phenomenon is really of the nature of a reflex is proved by the fact that the increased pressure is present over the whole body. It may also be detected in the other arm. Concerning the significance of the blood pressure reflex, the author states that it always indicates a sensitiveness of the heart. Whether or not this condition will lead to other complications depends on several factors. Of significance are the absolute blood pressure, the intensity of the reflex and the condition of the cerebral vessels. A strong reflex in a patient in whom the cerebral vessels do not show degenerative changes is of less importance than a weak reflex in an individual with arteriosclerosis. However, it is certain that in persons with hypertension the individual with the blood pressure reflex is in greater danger of apoplexy than the one in whom this reflex is absent. The author also warns against intravenous injections of arsphenamine or similar preparations in patients who show this reflex. He thinks that, in order to recognize the practical significance of the blood pressure reflex in its various aspects, additional experiences will be necessary.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

82: 259-400 (July) 1929

*Torsion of Gravid Uterus. J. Koerner.—p. 259.
Spontaneous Tear of Umbilical Cord with Velamentous Insertion on Placenta. J. Russin.—p. 264.
Osteogenesis Imperfecta. E. Puppel.—p. 269.
*Nature of Disposition to Tumors. L. Freund.—p. 276.
*Rupture of Capsule of Intramural Myoma of Uterus. R. Brühl.—p. 287.
Results of Surgical Treatment and Irradiation in Cancer of Uterus. H. Nahmmacher.—p. 291.
Late Results of Surgical Treatment of Inflammation of Uterine Adnexa. F. C. Geller.—p. 296.
*Diagnostic Value of Bordet-Gengou Reaction in Diagnosis of Gonorrhea in Women. N. A. Lwow.—p. 305.
Microscopic Changes in Ovaries Following Unsuccessful Roentgen Castration. H. Wolf.—p. 312.
*Value of Kauffmann Test in Gynecology. S. Heckscher.—p. 317.
*Late Dehiscence of Abdominal Scar. K. Kaiser.—p. 322.
*Recovery in Mercury Poisoning. K. Kaiser.—p. 325.

Torsion of Gravid Uterus.—Koerner reports a case of torsion of the normal uterus late in pregnancy in a primigravida, aged 22. An examination of the patient one month previously had revealed a normal pregnancy. The patient felt well and had been able to work until shortly before entering the hospital; at that time there suddenly appeared marked edema of the vulva and the legs. The most striking feature of her condition, however, was the unusual configuration of the abdomen; in the median line just above the umbilicus there was a definite projection of the abdominal wall. The fundus of the uterus was under the right costal arch. A diagnosis of torsion of the uterus to the right was made. When the abdomen was opened a large amount of cloudy exudate containing large floccules of fibrin escaped. The uterus was rotated 90 degrees to the right, and the left tube and ovary were situated anteriorly in the median line. An attempt to rotate the uterus back into its normal position was unsuccessful. The author therefore opened the uterus (making the incision as far as possible to the right) and removed a living infant. By exerting traction on the first layer of sutures in the uterus the empty organ was then easily rotated back into its normal position.

Nature of Disposition to Tumors.—Freund presents evidence in support of Cohnheim's theory of the origin of tumors.

Rupture of Capsule of Intramural Myoma of Uterus.—To the six cases already reported in the literature, Brühl adds another case of rupture of the capsule of an intramural myoma of the uterus. His patient was 47 years of age and had had two spontaneous labors. For four years she had noticed that her abdomen was getting larger; the increase in the size had been particularly rapid during the six months before the patient entered the hospital. Examination revealed an elastic tumor which filled the lower half of the abdomen and extended two fingerbreadths above the umbilicus. Attached to this tumor was a second tumor the size of an apple. At operation the author found a tumor 20 by 12 by 14 cm. on the posterior wall of the uterus. The tumor was surrounded by a capsule from 1 to 1.5 cm. thick. On the left side of the tumor there were two outgrowths, one the size of a small apple and one the size of a walnut, which had broken through the capsule and were covered only by peritoneum.

Diagnostic Value of Bordet-Gengou Reaction in Diagnosis of Gonorrhea in Women.—On the basis of the systematic use of the Bordet-Gengou reaction in 527 women with various diseases of the genitalia, Lwow states that this reaction is of great diagnostic value both in uncomplicated and in complicated gonorrhea. In uncomplicated gonorrhea, positive reactions are obtained in approximately 50 per cent of all acute cases and in 27.8 per cent of all chronic cases. The presence of gonococci in the discharge increases the percentage of positive reactions in uncomplicated acute and chronic gonorrhea 36.2 and 19.6 per cent, respectively. In both acute and chronic complicated gonorrhea in which gonococci are present in the discharge the percentage of positive reactions increases up to 90. In complicated gonorrhea in which gonococci are not present in the discharge, positive reactions are obtained in 75 per cent of the cases. The presence of gonococci in the discharge increases the percentage of positive reactions in both uncomplicated and complicated gonorrhea. The author believes that the presence of gonococci in the organism produces a certain amount of immunity due to antibodies in the serum.

Value of Kauffmann Test in Gynecology.—From his experiences with the Kauffmann test in eighty-three cases of various gynecologic diseases, Heckscher concludes that this test is of great value for determining the condition of the circulatory system before gynecologic operations.

Late Dehiscence of Abdominal Scar.—Kaiser reports a case of spontaneous dehiscence of an abdominal scar in a woman, aged 29, two years after a cesarean section. Almost all of the intestines passed through the opening and were wrapped in a dirty woolen cloth. In spite of the fact that the patient was not operated on until six hours later and that the intestines had become so adherent to the cloth that they were separated from it with difficulty, not even the slightest symptom of peritonitis developed and the wound in the abdominal wall healed by primary intention.

Recovery in Mercury Poisoning.—Kaiser reports a case of typical acute mercury intoxication with bloody diarrhea, stomatitis and complete anuria of three days' duration in a woman, aged 22. Although the rest nitrogen rose to 404 mg. per hundred cubic centimeters of blood the patient did not present symptoms of uremia. Repeated venesections, infusions of dextrose and administrations of methenamine were without effect and symptoms of uremia appeared. Decapsulation of the right kidney was followed by a sudden drop in the rest nitrogen to 154 and the patient passed 625 cc. of urine in sixteen hours. The venesections and infusions of dextrose solution were then resumed. When the patient was dismissed from the hospital she was completely free from symptoms and the urine was normal. Although in this case the patient's life was saved, the author takes the occasion to condemn the prescription of corrosive mercuric chloride for vaginal irrigation. He states that, in consideration of the fact that there are so many less poisonous antiseptics available, the use of corrosive mercuric chloride in obstetrics and gynecology should be discontinued.

Münchener medizinische Wochenschrift, Munich

76: 1239-1280 (July 26) 1929

*Irradiation of Brain Tumors. K. Backmund.—p. 1239.
Hormonal Substance in Central Nervous System. L. Haberlandt.—p. 1240.
*Therapeutic Value of Implantation of Endocrine Glands. A. Theilhaber.—p. 1241.
Genital Atrophy and Its Relation to Hormonal Action of Anterior Lobe of Hypophysis. K. Ehrhardt.—p. 1246.
Severe Metritis Caused by Contraceptive Pessary: Critical Evaluation of Intra-Uterine Contraceptives. G. J. Pfalz.—p. 1248.
Clinical Aspects and Treatment of Gonorrheal Tendovaginitis. F. Duncker.—p. 1250.
Bodily Exercises in Prophylactic Care of Juveniles. K. Gebhardt.—p. 1251. C'td.
Investigations as to How Many of the Prescribed Orthopedic Apparatuses are Really Worn. J. Kochs.—p. 1254.
Immunization Processes in Syphilis and Tuberculosis. H. Loeschcke and H. Lehmann-Facius.—p. 1255.

Irradiation of Brain Tumors.—Backmund directs attention to the fact that the surgical treatment of tumors of the brain results in many fatalities and cures the patient only in rare cases. Because of this he recommends the use of roentgen rays in certain cases of cerebral tumors. He gives tabular reports on the effectiveness of irradiation in eighty-one cases. Roentgen therapy gave favorable results especially in tumors of the cerebellum. Less satisfactory results were obtained with irradiation in tumors of the cerebrum. Accordingly, the author does not recommend roentgen therapy in all cases of tumor of the brain. He considers surgical treatment advisable in cases in which the exact location of the tumor is known and in which a radical operation seems feasible. However, in instances in which the topographical diagnosis is not definite, or in tumors of the cerebellum which involve great dangers during an operation, and in patients who would otherwise be treated by trepanation, irradiation is advisable. The author further advises that, whenever a series of roentgen treatments has proved effective, a second, third and fourth series should be given after certain intervals. He asserts that nearly 50 per cent of the patients improved to such an extent that they were able to follow their occupations. As to the permanence of the results, definite statements cannot as yet be made because only a comparatively short time has elapsed since the treatment was begun. In order to give patients with tumors of the brain the greatest possibilities for improvement and recovery, early and correct diagnosis and an effective therapy are essential, and to attain this aim the author recommends the cooperation of a general practitioner, a neurologist, a surgeon and a roentgenologist.

Therapeutic Value of Implantation of Endocrine Glands.—Theilhaber thinks that in the near future organotherapy and hormone treatment will largely supplant chemotherapy. He points out that for several years organs such as the pancreas, thyroid, suprarenals, liver, spleen and thymus have been employed for therapeutic purposes. Either they were administered in the diet or their essential substances were injected. Because in some instances these forms of administration did not prove entirely satisfactory, the author employed the implantation method. He extracts parts of endocrine organs from anesthetized animals and implants them into the subcutaneous tissue of the abdomen or of the thigh. He asserts that this method has certain advantages over other forms of organotherapy as all the valuable substances are implanted into the patient's organism in the living and unchanged state. He thinks that the living hormone is more effective than one contained in a preparation and that the entire organ is better than the extract. Implantation is better than repeated injections because it furnishes a depot from which the hormones are steadily released into the blood stream. The oral administration of a hormone preparation is likewise not as satisfactory as implantation because many valuable substances are destroyed in the digestive tract. Implantation is usually followed by a fever period lasting from four to six days. The fever also exerts a therapeutic influence by stimulating the reticulo-endothelial system. The author asserts that this form of organotherapy stimulates all vital functions. During the last two and one-half years he performed 108 implantations. More than half of the patients had epithelial cancers. In these cases spleen was implanted because implantation of this organ increases the carcinolytic qualities of the blood. In most instances the pains and suppurations decreased. The cancerous growth became smaller, and occasionally primary tumors and metastases disappeared entirely. The author further mentions the favorable results that were obtained with the implantation method in twenty-six cases of diseases of the central nervous system. Diseases such as acute anterior poliomyelitis, multiple sclerosis, syringomyelitis and encephalitis were treated by implantation of spleen, thymus, thyroid and liver. In nine of these cases, gray substance of the brain was also implanted. In several instances this therapy was followed by complete recovery, and in the majority of cases marked improvement was noted. Organotherapy in the form of implantations was successfully used likewise in cases of arthritis deformans, in disturbances of menstruation and in impotence. In discussing the value of the implantation method for the prevention of senility, the author points out that not only should the generative glands be implanted but the other endocrine glands are of equal importance.

76: 1281-1322 (Aug. 2) 1929

*Experiences with Liver Therapy in Pernicious Anemia. Schottmüller.—p. 1281.
*Idem. H. Schulten.—p. 1281.
*Influenza and Agranulocytosis. A. Benatt and F. Pfeuffer.—p. 1283.
Clinical Aspects and Differential Diagnosis of Angina with Atypical Lymphocythemia. D. Hrabowski.—p. 1283.

Various Fluids for Solution of Arsphenamine. G. L. Dreyfus.—p. 1285.
Treatment of Syphilitic Diseases of Central Nervous System by Means of Intralumbar Protein Injections. K. Mori.—p. 1288.
Indications and Contraindications for Suboccipital Puncture. J. Jacobs.—p. 1290.
Consideration of Changes in Evaluation of Heliotherapy in Tuberculosis. K. Klare.—p. 1291.
*Coitus Infection as Cause of Puerperal Fever. A. Bär.—p. 1292.
*Pregnancy and Sexual Intercourse. L. Ballin.—p. 1293.
Desensitization Treatment in Hay-Fever. H. Stern.—p. 1295.
Black Dermographism. W. Krantz.—p. 1295.
Possibility of Procreation Following Amputation of Penis. H. Mühlpfordt.—p. 1297.
Electro-Ionic Therapy in Cicatricial Keloids. J. Eiger.—p. 1297.
Bodily Exercises in Prophylactic Care of Juveniles. K. Gebhardt.—p. 1298. C'cn.

Experiences with Liver Therapy in Pernicious Anemia.—Schottmüller states that he has obtained satisfactory results in fifty cases. One patient has been under observation for the last three years. During 1926 his condition seemed almost hopeless. Even blood transfusion was no longer effective. With the aid of liver therapy the hemoglobin content of the blood became normal. Later, when the liver treatment was discontinued, he had a relapse but after renewed liver therapy he recovered again. He is now in good health. The author observed similar relapses in several cases in which the liver therapy had been discontinued or the liver had not been given in sufficient quantities. As the prerequisite of a successful liver therapy the author stresses an early diagnosis of the disease. It is also essential that the liver preparation be taken constantly, or, if it has been discontinued for a time, that its use be resumed as soon as the blood control shows a reduction in the hemoglobin. The author thinks that all other medicaments are superfluous. However, in cases in which the hemoglobin content is extremely low, blood transfusion may be necessary to save the life of the patient, until the liver therapy can become effective.

Experiences with Liver Therapy in Pernicious Anemia.—Schulten reports favorable results with liver therapy in twenty-five cases of pernicious anemia. He asserts that the prospects of recovery in this condition have been considerably improved since the introduction of liver therapy. It is essential for an effective liver therapy that the diagnosis be made early. However, in many instances the prognosis is unfavorable because the disease is complicated by nervous disturbances that often cause a fatal outcome. The author concludes that patients with pernicious anemia should be constantly under the observation of a physician. If the dose of liver is reduced, or if the treatment is discontinued, blood tests should be made regularly at intervals of two or three weeks. If such precautions are observed relapses may be avoided.

Influenza and Agranulocytosis.—Benatt and Pfeuffer point out that the clinical aspects of malignant influenza are similar to those of agranulocytosis. They give the detailed report of a case of fulminant influenza which had a fatal outcome. In this instance it was observed that not only the clinical aspects but also the anatomicopathologic changes were much like those in agranulocytosis. The authors express the opinion that the typical blood picture of agranulocytosis is probably only the symptom of severe infections and toxic processes. However, they do not deny that agranulocytosis, as described by Schultz, is a disease entity.

Coitus Infection as Cause of Puerperal Fever.—Bär describes two cases of puerperal fever. In both instances the anamnesis revealed that sexual intercourse had taken place a few hours before labor. In one case it could be demonstrated that the bacteria in the vaginal secretion and those on the prepuce were of the same kind. The author stresses the necessity of sexual abstinence during the last weeks before delivery, and he also points out that especially the husbands ought to be informed of this fact.

Pregnancy and Sexual Intercourse.—Ballin asserts that during the period of gestation sexual intercouse is practiced in nearly all cases. He thinks that, if the woman is healthy, restrictions are not necessary during the first five months of pregnancy. However, in cases of genital abnormalities, such as retroflexion of the uterus or infantilism, intercourse should be restricted, and in cases of habitual abortion complete abstinence is required. If coitus is practiced during the last months of gestation there exists for all women danger of hemorrhage, of premature rupture of the fetal membranes and of puerperal fever. Accordingly the author states that, between the sixth and eighth months, intercourse should be restricted. After that, complete abstinence is advisable.

Wiener klinische Wochenschrift, Vienna

42: 1041-1068 (Aug. 8) 1929

Value of Roentgenoscopy in Study of Anatomy. K. Goldhamer.—p. 1041.
Malignant Tumor of Suprarenal Cortex with Virilism and with Polycythemia. E. Zucker.—p. 1045.
Value of Böhler's Wire Finger Splint in Treatment of Severe Injuries of Fingers and of Metacarpus. F. Felsenreich.—p. 1046.
*Therapeutic Administration of Oxygen in Pediatrics. V. Mikulowski.—p. 1048.
*Microcythemia in Acute Pancreatitis. T. Fohn and S. Kúnos.—p. 1050.
Tapeworm in Gallbladder. I. Eisenklam.—p. 1051.
Utilization of Foods Under Normal and Pathologic Conditions. H. Elias.—p. 1052.
Diagnosis and Treatment of Acute and Chronic Postanginal Sepsis. G. Singer.—p. 1056.

Therapeutic Administration of Oxygen in Pediatrics.—Mikulowski describes a method of subcutaneous injection of oxygen which he employed successfully in numerous children. He directs attention to the limitations of the inhalation method, and then gives a review of the development of the method in which the oxygen is administered subcutaneously. He gives a detailed report of six cases in which the subcutaneous injection of oxygen gave favorable results. Two of the children were in an almost hopeless condition as the result of carbon monoxide poisoning. Following the subcutaneous injection of 100 cc. of oxygen they regained consciousness and the breathing and pulse became normal. After several days they recovered completely. The author further describes three cases of croup in which the injection of oxygen proved valuable. He also reports one case of hemorrhagic nephritis which developed after typhoid. In this instance 100 cc. of oxygen was injected on each of three successive days; the cyanosis, restlessness and high blood pressure disappeared and the child finally recovered. The author concludes that the subcutaneous injection of oxygen is a valuable aid in the treatment of asphyxial conditions.

Microcythemia in Acute Pancreatitis.—Fohn and Kúnos report a case of acute pancreatitis in a man, aged 52, which terminated fatally in two days. Microscopic examination of the pancreas revealed such marked changes that the normal structure of the organ could hardly be recognized; a beginning necrobiosis was noted. Examination of the brain showed edema and swollen ganglion cells. These pathologic changes indicated an acute degenerative pancreatitis. Measurement of the erythrocytes, which was performed according to different methods, revealed in each test that their size was considerably below the normal. The authors are convinced that this was a case of genuine microcythemia. They point out that other authors have observed macrocytosis in cases of chronic pancreatitis, and they do not feel justified in drawing general conclusions from the observation of one case.

Zeitschrift für Krebsforschung, Berlin

29: 307-434 (July 10) 1929

*Precarcinoma. H. T. Deelman.—p. 307.
Effect of Applications of Tar to Skin on Glycogen Content of Skin and Liver. M. Haendel and J. Malet.—p. 320.
Effect of Applications of Tar to Skin on Lipoid Content of Skin, Liver and Suprarenals. M. Haendel and J. Malet.—p. 324.
*Malaria and Cancer. A. Braunstein.—p. 330.
*Effect of Diet on Growth of Inoculation Tumors. W. Caspari, F. Ottensooser, M. Fauser and E. Blothner.—p. 334.
Cancer of Stomach in Rats Following Experimental Infestation with Hepaticola Gastrica. H. Vogel.—p. 351.
Effect of Transient Increase in Acidity on Growth of Tumor Cells. A. Krontowski and M. Magath.—p. 360.
*Growth of Cancer in Mice Following Administration of Irradiated Ergosterol. L. Barelli.—p. 376.
Cancer of Cecum in Girl, Aged Fourteen Years. D. M. Chajutin.—p. 389.
*New Agglutination Phenomenon. N. Waterman.—p. 395.
*Sensitivity of Normal and of Tumor Tissues to Mesothorium and Roentgen Irradiations. H. Laser and L. Halberstaedter.—p. 411.

Precarcinoma.—Deelman defines precarcinoma as a pathologic condition of cells and tissues that eventually results in or may result in a malignant growth. The term has been used for a large number of pathologic processes in some of which,

the changes rarely result in a malignant growth; in these cases it is not known whether or not the malignant growth appears spontaneously. The author believes that the term precarcinoma should be restricted to processes in which the malignant growth appears spontaneously. The leukoplakia that occurs in the upper portion of the respiratory and digestive tracts is to be considered a true precarcinomatous change. At the periphery of the carcinoma that develops in leukoplakia there occurs the gradual transition from epithelium to tumor; here is present the morphologic substratum of precarcinoma in its final development. The epithelium in the patch of leukoplakia is to be regarded as a first stage of precarcinoma.

Malaria and Cancer.—Braunstein calls attention to the prevalence of cancer in countries in which malaria is rare and its rarity in countries in which malaria is prevalent. In three countries in which malaria is rare the number of deaths from cancer per hundred thousand inhabitants from 1901 to 1905 was 150 (Denmark), 130 (Switzerland) and 110 (Norway). In three countries in which malaria is prevalent, the number of deaths per hundred thousand inhabitants during the same period was 57 (Italy), 40 (Hungary) and 10 (Serbia).

Effect of Diet on Growth of Inoculation Tumors.—In experiments on mice, Caspari et al. noted that a diet deficient in carbohydrates and vitamin B inhibited the growth of inoculation tumors.

Growth of Cancer in Mice Following Administration of Viosterol.—Barelli reports that the growth of adenocarcinomas in mice is inhibited by the administration of antirachitic vitamin in the form of viosterol (irradated ergosterol).

New Agglutination Phenomenon.—Waterman describes a new technic by means of which an agglutination of tumor cells and other cells may be produced with diluted serums. The phenomenon can be observed only in diluted serum. The agglutinins are present in all animals and develop after birth. In normal human serum their strength varies markedly with the seasons; in winter the titer is lowered. The variations in the strength of the agglutinins are caused by variations in the amount of solar radiation. The serum of patients with tumor contains a large amount of agglutinins; this fact can be demonstrated only in diluted serum because in undiluted serum the products of autolysis of the tumor which pass into the serum render the cells in the suspension resistant to agglutination. Other factors also, as infection and heating, can render the tumor cells resistant to agglutination and lysis.

Sensitivity of Normal and of Tumor Tissues to Mesothorium and Roentgen Irradiations.—In experiments in which cultures of mouse cancer and rat sarcoma and control cultures of normal tissues were subjected to mesothorium and roentgen irradiations, Laser and Halberstaedter found that the absolute sensitivity to irradiation was not greater in the tumor tissues than in the normal tissues. In all of the experiments the effect of the irradiation seemed to be dependent on the rate of growth of the tissues.

Zentralblatt für Chirurgie, Leipzig

56: 1985-2048 (Aug. 10) 1929. Partial Index

*Restoration of Width of Lower Jaw Following Loss of Both Condyloid Processes. F. Trauner.—p. 1986.
Formation of New Vagina from Sigmoid Flexure. J. Faehrmann.—p. 1989.
Fractures of Pelvis. R. Wilhelm and T. Fohl.—p. 1993.

Restoration of Width of Lower Jaw Following Loss of Both Condyloid Processes.—Trauner's patient, a woman, aged 32, had lost both condyloid processes of the mandible, the right in an operation for a suppurative process in the ear eight years previously, and the left in a ligation of the internal maxillary artery two years previously. The stump of the lower jaw occasioned great pain, and habitual luxation toward the left side occurred, on the slightest opening of the mouth, which was hard to correct manually. Operative correction necessitated enlargement of the mandible. This was accomplished under local anesthesia with a 0.5 per cent solution of procaine hydrochloride. A portion of the bone broad and thick enough to support two perforations was separated from the chin but kept attached to a pedicle of soft tissue. The remaining part of the lower jaw was divided 0.5 cm. to the left of the symphysis (separation of the symphysis leads, it is known, to the formation of a pseudarthrosis). Both parts of the lower jaw were then pulled apart, a hole was drilled through each side which coincided with the one on the bone segment, and the new position was maintained by a wire suture, the bone segment functioning as a splint. To prevent overburdening of the suture and a rotation of the jaw in its longitudinal axis, a removable artificial prosthesis was immediately inserted. The wound healed with the lower jaw in good position with regard to the upper jaw, but recovery was complicated by a fistula that necessitated the removal of the wire suture. Cautious opening of the mouth was permitted and for three weeks following the operation the condition was satisfactory. However, severe pain became manifest and a new deviation of the jaw occurred. At an interval of several weeks the joints were opened and smoothed, a meniscus on the right side was removed, and a transplant of tissue obtained from the thigh was interposed. Recovery was effected and the patient is now satisfied with the condition. She can masticate well and has no further trouble.

56: 2049-2112 (Aug. 17) 1929. Partial Index

Transplantation of Skin in Amputations of Foot. A. Blencke.—p. 2050.
*Perforating Gastric Ulcer with Pneumoperitoneum. W. Willemer.—p. 2062.
*Treatment of Pleural Empyema. J. Jäger.—p. 2064.
Postoperative Abdominal Hernia: Treatment by Means of Abdominal Supporter. A. Schanz.—p. 2065.

Perforating Gastric Ulcer with Pneumoperitoneum.—Willemer's patient, aged 22, had undergone an operation one year previously for perforation of a gastric ulcer following a trauma. Resection of the ulcer was impossible; therefore the tear in the pylorus was sutured and gastro-enterostomy was performed. After his recovery the patient resumed his work as a laborer. One day when lifting a heavy object he suddenly felt an intense pain. On resting he felt relieved, but an increasing distention of his abdomen became evident. Vomiting occurred only once, at the onset. The fifth day after the accident he entered the clinic. His general condition was good and, except for the abdominal distention, no discomfort was felt. The temperature was only slightly above normal, but especially striking was the pulse rate of 110 a minute. The differential diagnosis was complicated by the fact that a roentgen examination could not be made and symptoms of peritonitis, covered perforation and intestinal obstruction were absent. The breathing became more and more difficult and nine days after the accident laparotomy was performed. When the peritoneum was opened about 10 liters of odorless gas escaped. The diaphragm had been displaced upward to the third intercostal space. The intestines were collapsed and in the entire peritoneum not a drop of fluid was evident. Solely near the scar of the old gastro-enterostomy there was a greenish deposit 4 by 2 cm., in the midst of which there was a small cleft with an air bubble superimposed. Suture was not possible; the wound was covered with omentum and a drain was inserted. Adhesions formed during the healing and caused occasional disturbance in the passage of the intestinal contents, but a serious obstruction did not develop and the patient recovered without subsequent complications. The mechanism of this pneumoperitoneum, according to Willemer, may be explained by the formation of a valve which, although permitting the escape of air from the stomach, did not permit its return. The contraction of the diaphragm compressed the cardia and forced air into the peritoneal cavity through the valve. Of interest was the fact that the air that collected within this period of nine days was sterile.

Treatment of Pleural Empyema.—Following a short discussion of the methods generally used, Jäger gives a description of the one in use at Budapest and recommends it on the basis of his personal experience in twenty-four cases. This treatment aims to combine the advantages of other methods by inserting a drain and collecting the pus in a container devised by Jäger. A trocar 6 mm. in diameter is inserted at the lowest point of the exudate (most often in the ninth intercostal space). After removal of the mandrin a drain is introduced into the thoracic cavity and the trocar also is removed. The pus is collected in a container termed by Jäger an empyema aspirator, which also maintains the negative pressure in the thoracic cavity. Irrigation is performed daily with physiologic solution of sodium

chloride till pus is no longer eliminated. This may occur in from ten to twenty days. The drain is removed and the edges of the opening are drawn together with adhesive tape. Jäger advises the use of this treatment, as experience has proved its efficacy. The collection of the pus by the use of the empyema aspirator represents a saving of dressings and permits outpatient treatment.

Nederlandsch Maandschrift voor Geneeskunde, Leyden

15: 571-620, 1929

*Nodules in Acute and Subacute Rheumatism. C. de Lange.—p. 571.
Scoliosis in Infants and Its Treatment. R. J. Harrenstein.—p. 579.
Meningitis Due to Bacillus Cerebro-Spinalis Septicaemiae (Cohen). C. C. van der Heide.—p. 614.

Nodules in Acute and Subacute Rheumatism.—De Lange brings out that nodules associated with rheumatism occur mostly in the subcutis but also in the galea aponeurotica, the joint capsules, the pia mater, the heart muscle and the skeletal muscles. The size varies from that of a pea to that of a walnut. The skin over them does not change in color ordinarily, though sometimes there is a slight redness. Often their localization is more or less symmetrical. They develop at times in a single night. In the first stage they are somewhat painful; later little pain is noticed. The nodules may be palpable and visible for weeks, but they may also disappear rather suddenly. The elbows, the knees, the ankles, the metacarpophalangeal joints, and the spinous processes of the vertebrae are predilection points. De Lange's studies on a series of cases leads her to conclude that there is no adequate justification for setting up "nodose rheumatism" as a morbid entity. Nodules in association with rheumatism in children are comparatively common. The presence of many large nodules is very general in grave heart disorders (endocarditis, pericarditis) and is an indication of an unfavorable prognosis.

Bibliotek for Læger, Copenhagen

121: 281-340 (July) 1929

*Demonstration of Tubercle Bacilli by Cultivation and by Animal Inoculation. K. Winge.—p. 281.
Investigations with Tscherning's Photometric Glasses on Functioning of Eye in Weak Illumination. H. U. Møller.—p. 327.

Demonstration of Tubercle Bacilli by Cultivation and by Animal Inoculation.—Winge found neither of these methods absolutely reliable. When direct microscopic examination gives negative results, the use of both methods is advised. Although the results of cultivation on Petroff's medium and on Hohn's medium are about the same, Hohn's method is preferred from the practical point of view. In guinea-pig tests he advises the intracutaneous inoculation (also intraperitoneal if the material suffices) of at least two animals. If the examination of pus or detritus proves negative, an attempt should be made to detect the tubercle bacilli by extirpation and examination of the inguinal lymph nodes. If the results of this examination also are negative, the animal should be killed six weeks after inoculation and examined for tuberculous lesions. Although intracutaneous and intraperitoneal inoculations are considered of equal value, both are recommended, to utilize the largest amount of material and cause the most severe infection.

Hospitalstidende, Copenhagen

72: 745-772 (July 11) 1929

*Blood Examinations in Achylia, with Especial Regard to Pernicious Anemia. A. Borgbjærg and M. C. Lottrup.—p. 745.
*Primary Cutaneous Gonorrheal Infection, Panaritium Followed by Gonorrheal Lymphangitis, General Infection, and Polyarthritis. V. Genner and P. Schultzer.—p. 764.

Blood Examinations in Achylia, with Especial Regard to Pernicious Anemia.—Borgbjærg and Lottrup examined 152 patients with gastric achylia and fifty-seven with a positive congo reaction. Of 134 patients with gastric achylia (five with known pernicious anemia at the start of the examinations and thirteen with gastric cancer omitted), 50 per cent had anemia, usually of milder degree and simple type. In 22 per cent the color index was above 1. Megalocytosis was found in 15 per cent, most often in patients with a high hemoglobin value. It was always present in pernicious anemia but never in gastric cancer and usually was associated with a color index below 1. The size of the blood corpuscles sometimes varied in the same patient, increasing during the use of arsenic and occasionally of iron. Liver treatment often decreased the size of the blood corpuscles in megalocytosis. Megalocytosis was found in cases in which pernicious anemia was doubtful. The authors believe that careful examination of the blood, especially in cases with a high hemoglobin percentage, will probably reveal some cases of pernicious anemia at an early stage.

Primary Cutaneous Gonorrheal Infection, Panaritium Followed by Gonorrheal Lymphangitis, General Infection, and Polyarthritis.—In Genner and Schultzer's case in a dermatologist, direct cutaneous transmission from a patient occurred through a barely visible lesion in the epidermis. A panaritium with lymphangitis resulted, with metastatic spread in the form of a polyarthritis. The character and course of the joint condition were typical of gonorrheal arthritis. The gravity of this case with its complications is a warning, especially to dermatologists, to bear in mind the possibility of a gonorrheal panaritium.

72: 801-828 (July 25) 1929

*Possible Coupling Between "Anti-A" and "Anti-B" Iso-Agglutinins in Type O Serum. O. Thomsen and E. Worsaae.—p. 815.
*Diagnostic Value of Colloidal Gold Chloride Test. A. V. Neel and P. Dickmeiss.—p. 821.

Possible Coupling Between "Anti-A" and "Anti-B" Iso-Agglutinins in Type O Serum.—Thomsen and Worsaae state that there is no evidence for the assumption of this coupling. The observation that type A or type B erythrocytes can bind some of the heterologous agglutinin in type O serum is undoubtedly correct but, if so, the agglutinin is bound secondarily.

Diagnostic Value of Colloidal Gold Chloride Test.—Neel and Dickmeiss assert that the colloidal gold chloride test offers no essential advantage over the globulin and the albumin determination. Even "paralysis curves" are not the result of changes specific for syphilis because these curves have been noted in cases of multiple sclerosis and in tuberculosis; also in two cases of inflammation of an unknown nature, probably chronic epidemic encephalitis. The colloidal gold chloride test may also be negative in cases in which considerable pathologic changes in the albumin in the cerebrospinal fluid have been demonstrated.

Ugeskrift for Læger, Copenhagen

91: 687-706 (Aug. 15) 1929

*Symptomatology and Treatment of Tumors of Spinal Cord. V. Christiansen.—p. 687.
*Diabetes and Hypertension. V. Larsen.—p. 695.
Dyspeptic Symptoms in Patients with Disorders in Upper Air Passages. R. Schroeder.—p. 696.
*Two Cases of Lesion Due to Thermometer, One with Grave Arterial Bleeding. P. Windfeld.—p. 698.
Statistics on Snake-Bite. C. C. C. Vogel.—p. 699.

Symptomatology and Treatment of Tumors of Spinal Cord.—Christiansen considers the differential diagnosis in tumors of the spinal cord, calling attention to the possible confusion of these tumors with various organic diseases without connection with the nervous system, and also pointing to the possible appearance of extraspinal tumors under a clinical picture that suggests almost any one of the systemic diseases of the spinal cord. He particularly emphasizes the importance of determining whether or not the tumor located in the spinal canal is in the spinal cord. Several cases of incorrect diagnosis are discussed. He advises incision of the dura in all cases, even if a tumor cannot be palpated through it, and even if an epidural tumor is found as there may also be a tumor within the dura, or a serous meningitis may be revealed.

Diabetes and Hypertension.—A greater tendency to hypertension in diabetic patients than in nondiabetic patients was observed by Larsen. In women the climacteric is believed to increase the tendency to hypertension. Diabetic hypertension resembles essential hypertension.

Two Cases of Lesion Due to Thermometer, One with Grave Arterial Bleeding.—In both of Windfeld's cases the lesion of the mucous membrane was on the anterior side of the rectum at a distance from the anus corresponding to the location of the tip of the thermometer.